CA1
DTC 800
89
R18

DATE DUE

JUL 13 1991

CA1
DTC800-
89
R18

432037

41.D

.CA1
DTC 800
89
R18

TP 9907E

RAIL WEAR MEASUREMENT

Prepared for
Transportation Development Centre
Policy and Coordination Group
Transport Canada

Library and Information Centre /
Centre de Do[illegible] (BSLA)
RECEIVED / REÇU LE
MAR 22 1990
Transport Canada / Transports Canada

by

W. Ament, P. Eng

BC RAIL LTD.

June 1989

432037

DDN 432034

91-03657/

The contents of this report reflect the views of the contractor and not necessarily the official view or opinions of the Transportation Development Centre of Transport Canada.

Un sommaire en français de ce rapport est inclus avant la table des matières.

Transport Canada Transports Canada

PUBLICATION DATA FORM

1. Transport Canada Publication No.: TP 9907E

2. Project No.: 6312

3. Recipient's Catalogue No.:

4. Title and Subtitle: **RAIL WEAR MEASUREMENT**

5. Publication Date: June 1989

6. Performing Organization Document No.:

7. Author(s): **W. Ament, Project Engineer, BC Rail**

8. Transport Canada File No.: D1465-317-24

9. Performing Organization Name and Address:

BC Rail Ltd.
P.O. Box 8770
Vancouver, B.C.
V6B 4X6

10. DSS File No.: 08SB.T8200-5-5510

11. DSS or Transport Canada Contract No.: OSB85-00165

12. Sponsoring Agency Name and Address:

Transportation Development Centre (TDC)
200 René-Lévesque Blvd. West
Suite 601, West Tower
Montreal, Quebec H2Z 1X4

13. Type of Publication and Period Covered: Final 1985-1989

14. Project Officer: **D.W. Dibble**

15. Supplementary Notes (Funding programs, titles of related publications, etc.)

Study coordinated by BC Rail with assistance from CN Rail, Association of American Railroads and the National Research Council Canada.

16. Abstract

The purpose of the study was to determine reduction on rail wear from the use of self-steering trucks on BC Rail's Tumbler Subdivision. This was accomplished by completing tests including the witness groove test method, rail temperature rise method and profilometer measurement.

The first two tests concluded that self-steering trucks reduce gauge face wear under dry rail conditions. On lubricated rail, there is virtually no difference between self-steering and conventional trucks.

Using the profilometer data, calculations are included for head loss as a function of tonnage, taking into account rail grinding. For complete evaluation of the profilometer data, additional wear data for rail having similar service but with conventional trucks will have to be provided.

17. Key Words

Rail wear, measurement, self-steering trucks, premium, conventional.

18. Distribution Statement

Limited number of copies available from the Transportation Development Centre

19. Security Classification (of this publication): Unclassified

20. Security Classification (of this page): Unclassified

21. Declassification (date):

22. No. of Pages: 362

23. Price:

TDC/CDT 79-005
Rev 88

Canada

Transports Canada Transport Canada

FORMULE DE DONNÉES POUR PUBLICATION

1. N° de la publication de Transports Canada
TP 9907E

2. N° de l'étude
6312

3. N° de catalogue du destinataire

4. Titre et sous-titre
RAIL WEAR MEASUREMENT

5. Date de la publication
Juin 1989

6. N° du document de l'organisme exécutant

7. Auteur(s)
W. Ament, Project Engineer, BC Rail

8. N° de dossier — Transports Canada
D1465-317-24

9. Nom et adresse de l'organisme exécutant
BC Rail Ltd.
C.P. 8770
Vancouver (Colombie Britanique)
V6B 4X6

10 N° de dossier — ASC
08SB.T8200-5-5510

11. N° de contrat — ASC ou Transports Canada
OSB85-00165

12. Nom et adresse de l'organisme parrain
Centre de développement des transports (CDT)
200 ouest, boul. René-Lévesque
Tour ouest, suite 601
Montréal (Québec) H2Z 1X4

13. Genre de publication et période visée
Final 1985-1989

14. Agent de projet
D.W. Dibble

15. Remarques additionnelles (Programmes de financement, titres de publications connexes, etc.)
Étude coordonnée par BC Rail, aidée du CN Rail, de l'Association of American Railroads (AAR) et du conseil national de recherches Canada.

16. Résumé

La recherche avait pour but de déterminer dans quelle mesure les bogies à essieux orientables ont contribué à réduire l'usure des rails sur la ligne de Tumbler Ridge appartenant à BC Rail. Elle a été réalisée grâce à trois séries de contrôles par les méthodes: à rainure témoin, d'échauffement des rails et de contrôles profilométriques.

La recherche par les deux premières méthodes montre que les bogies à essieux orientables contribuent à réduire l'usure de la face intérieure du champignon en régime sec, mais que, en régime lubrifié, aucune différence ne peut être décelée entre ces bogies et les bogies classiques.

Quant à la troisième méthode, elle a produit des relevés profilométriques qui montrent l'usure du champignon en fonction du tonnage écoulé, compte tenu de meulage des rails. Pour que l'évaluation des contrôles profilométriques soit complète, il faut pouvoir disposer de données sur l'usure des rails d'un tronçon écoulant un tonnage identique transporté par des trains équipés de bogies classiques.

17. Mots clés
Usure des rails, contrôles, bogies à essieux orientables, bogies classiques.

18. Diffusion
Le Centre de développement des transports dispose d'un nombre limité d'exemplaires.

19. Classification de sécurité (de cette publication)	20. Classification de sécurité (de cette page)	21. Déclassification (date)	22. Nombre de pages	23. Prix
Non classifiée	Non classifiée		362	

PREFACE

This project was conceived in April 1985. At that time several premium truck evaluations were underway, and this project is very closely related to these. In each of the truck evaluations only wheel wear and not rail wear was being measured due to the low percentage of premium trucks in a fleet. With the purchase and operation of a large fleet of self-steering trucks on BC Rail's Tumbler Subdivision, it was then possible to determine the amount of rail wear reduction attributable to premium trucks.

ACKNOWLEDGEMENTS

The required testing was made possible with the assistance of several outside groups. BC Rail would like to gratefully acknowledge the assistance received from:

- the American Association of Railroads' (AAR) Transportation Test Center (TTC) of Pueblo, including Rich Reiff, Steve Mace and others for performing the witness groove and rail temperature rise tests. In addition this report uses the data for these tests as contained in their report R-693 "Effects of Rail Lubrication on Premium and Conventional Trucks on British Columbia Railway" dated March 1988.
- CN Rail's Technical Research Centre of Montreal, including Nelson Caldwell, Jean Louis Bousquet and others for providing their profilometer, set up assistance and plotting and interpretation of three years of readings.
- the National Research Council's (NRC) Mechanical Engineering Laboratory of Vancouver, including Joe Kalousek and Marcus Tso for evaluating the witness groove replicas.

SUMMARY

1. INTRODUCTION

The objectives of the rail wear measurement project were to determine the reduction in rail wear on the Tumbler Subdivision that can be attributed to DR-1 self-steering freight car trucks and to provide data on which rail wear cost savings can be quantified.

These objectives were accomplished by a series of three tests, namely:

- Witness Groove Method,
- Rail Temperature Measurement, and
- Profilometer Measurement.

These tests were coordinated by the contractor, BC Rail, and performed with assistance from various groups from the Association of American Railroads'- Transportation Test Center (AAR/TTC), CN Rail, and National Research Council(NRC). The work was carried out between April 1985 and April 1989.

2. STUDY METHODOLOGY

All measurements for the tests were taken on BC Rail's Tumbler Subdivision. This rail line consists of 80 miles of 115 lb. Continuous Welded Rail (CWR) with curves up to and including 6 degrees and grades of 1.5% empty and 1.2% loaded direction.

Witness Groove Method

The witness groove method was developed by the NRC to determine micro-wear measurements on the rail head using the following method:

- A hacksaw blade is used to cut a narrow groove across the rail head.
- A 1:1 casting of the groove is made using a small metal mold and non-shrink dental compound.
- After the passage of a prescribed number of trains, a second replica is made.
- Comparison of the two replicas will show less "height" of the groove on the second casting and this is the wear for the known train tonnage. The micro-wear is measured in a lab using a contour profilometer.

The field testing was carried out in August 1986 and was performed under two regimes, a dry rail state and then a lubricated rail state. Two special train consists were set up by the Railway Coal Coordinator. One train consisted of cars with conventional freight car trucks and the other train had self-steering trucks. The test locations were chosen to represent 6 curvatures between 1 and 6 degrees.

During the period May to August 1987 the replicas were analyzed at the NRC Mechanical Lab, using their Mitutoyo Contracer.

Rail Temperature Rise Measurement

The friction between the rail and the wheel of a passing train results in an increase in the rail head temperature. With two identical trains except for differing trucks, the temperature rise is directly proportional to the friction produced with the self-steering trucks presumably producing less friction than the conventional trucks.

Four of the same curves as the witness groove sites were used to measure temperature rise. These were a 3-30, 4-00, 5-00 and 6-00 degree curve and the measurements were taken by either a continuous Temperature Data Recorder or a portable temperature readout unit connected to the high rail by thermocouples. The rail temperature rise test was done in conjunction with the witness groove testing in August 1986. The same test trains used for that test, under dry and lubricated conditions, were used to monitor temperature rise.

Profilometer Measurement

The rail profilometer testing was carried out with CN Rail's assistance using their equipment and data analysis facilities. This method of measuring rail wear involved plotting the rail head profile twice a year over a three year period. Tonnages were recorded from one test to the next for the particular mix of trucks on the territory, which in this case is 62% self-steering trucks and 38% conventional. The rail wear measured as head loss is then to be compared to a similar piece of track with like traffic but a different mix of trucks to determine to what extent the self-steering trucks wear the rail less.

The field work for this measurement method involved four steps as follows:

. Selection of test sites involved ensuring the inclusion of uphill, downhill and level grades for loaded trains, and both right-hand and left-hand curves of 1 to 6 degrees. In all, 35 curves and 3 tangent locations were selected and this resulted in a total of 216 test spots.

- Special modified joint bars had to be manufactured and installed at the test spots to provide the surface to which all readings were to be referenced.
- The test readings using the rail profilometer and the recording microprocessor were employed twice a year, usually May and September, in the years 1986 to 1988.
- Train traffic data had to kept. The number of trains over each test spot had to be recorded to be able to calculate tonnages.

The final stage of the profilometer measurement was the analysis of all the raw data collected. This was carried out by CN Rail's Technical Research personnel using their software.

3. MEASUREMENT RESULTS AND CONCLUSIONS

Witness Groove Method

Altogether there were 48 replicas to measure in the contracer, representing before and after conditions for the two different types of trucks under dry and lubricated rail states and for 6 different curves on both the high and low rails.

The general conclusion drawn from the witness groove results is that self-steering trucks reduce gauge face wear under dry rail conditions. Under lubricated rail conditions there is no wear difference between conventional and self-steering trucks. It appears that lubrication reduces wear more than self-steering trucks.

Rail Temperature Rise Measurement

The general conclusion from the rail temperature rise data is very similar to that from the witness groove measurements. The conclusion is that self-steering trucks reduce rail wear slightly under dry and lubricated rail conditions over conventional trucks. Lubrication, however reduces wear more than self-steering trucks.

Profilometer Measurement

The profilometer data collected is summarized and the complete data for each site and the plots of original rail head profile and all subsequent profiles are included. Calculations are also included for head loss as a function of train tonnage, taking into account rail grinding. Rail grinding was a normal part of the track maintenance during the study period.

This will allow comparison to data, to be gathered in the future, for rail having similar service but with a different mix of trucks.

SOMMAIRE

1. INTRODUCTION

La recherche avait pour objet de déterminer dans quelle mesure les bogies à essieux orientables DR-1, équipant les trains de marchandises circulant sur la ligne de Tumbler Ridge en Colombie-Britannique, contribuent à réduire l'usure des rails, et d'obtenir l'information permettant de calculer les économies correspondantes.

Elle a été réalisée grâce aux trois séries de contrôle suivantes:

- la méthode de mesure par "rainure témoin",
- l'échauffement des rails,
- les contrôles profilométriques.

Sous la coordination du contractant, BC Rail, ont concouru à ce programme : l'Association of American Railroads, CN Rail et le Conseil national de recherches du Canada (CNR), les travaux s'étalant de avril 1985 à avril 1989.

2. MISE EN OEUVRE

La campagne de mesurage s'est concentrée sur la ligne de Tumbler Ridge appartenant à BC Rail; longue de 80 milles et constituée de longs rails soudés de 115 lb, cette ligne comprend des courbes ne dépassant pas 6 degrés et des rampes de 1,5 et 1,2 p. 100 dans le sens de la marche à vide et de la marche en charge, respectivement.

Méthode de la "rainure témoin"

Étudiée par le Conseil national de recherches, cette méthode de mesurage micrométrique de l'usure du champignon des rails fonctionne de la manière suivante :

- une rainure étroite est faite au travers du champignon;
- un moulage de cette rainure est pris en utilisant un petit moule métallique et une résine ne rétrécissant pas;
- au bout d'un nombre déterminé de passages, on prend un deuxième moulage de la rainure;

- les deux moulages sont alors comparés, la différence étant l'usure constatée à l'égard du tonnage transité et connu. La mesure micrométrique de l'usure se fait en laboratoire à l'aide d'un appareil conçu exprès.

Menés en août 1986, ces contrôles ont été exécutés avec et sans lubrification des rails. Deux trains charbonniers ont été utilisés, sous l'égide du coordonnateur du transport ferroviaire de charbon, l'un équipé surtout de bogies classiques, l'autre surtout de bogies à essieux orientables. Quant aux sites choisis, ils comportaient six courbes ayant de 1 à 6 degrés.

De mai à août 1987, les moulages obtenus ont été analysés au laboratoire d'essais mécaniques du CNR, à l'aide d'un appareil étudié par Mitutoyo.

Échauffement des rails

Le frottement roue-rail résultant du passage d'un train provoque l'échauffement des rails. Dans le cas de deux trains identiques, à l'exception des bogies, l'échauffement est directement proportionnel au frottement, ce dernier étant probablement moins prononcé dans le cas des bogies à essieux orientables.

Quatre des sites utilisés pour le contrôle par la méthode de la rainure témoin ont servi au contrôle de l'échauffement des rails; les courbes correspondantes étant de 3-30, 4-00, 5-00 et 6-00 degrés. L'échauffement a été mesuré soit par un enregistreur fixé à demeure, soit par un appareil à lecture directe relié à la file extérieure des rails par un thermocouple. Ce contrôle thermométrique a été mené en août 1986, en même temps que les contrôles précédents utilisant les mêmes trains et sous les mêmes régimes de lubrification des rails.

Contrôles profilométriques

Menés avec le concours de CN Rail qui a contribué au matériel de mesure et d'analyse nécessaire, ces contrôles du profil du champignon des rails ont eu lieu deux fois par an pendant trois ans. Le tonnage transité entre deux mesurages a été consigné, de même que la proportion des bogies à essieux orientables et classiques qui, sur la ligne considérée, était de 62 et de 38 p. 100, respectivement. La différence constatée au cours de ces contrôles et exprimant l'usure des rails a été par la suite comparée à celle résultant des contrôles effectués sur un tronçon identique, mettant en oeuvre un train écoulant le même tonnage mais où la proportion des bogies à essieux et classiques est différente, de manière à mettre en évidence toute réduction dans l'usure des rails qui serait attribuable aux bogies à essieux orientables.

Les travaux correspondants sont passés par les quatre étapes suivantes :

- sélection des sites de manière à inclure des rampes, des pentes et des paliers dans le sens de la marche en charge, et des courbes tant à droite qu'à gauche ayant de 1 à 6 degrés de courbure, soit en tout 35 courbes et trois alignements donnant un total de 216 sites;
- utilisation d'éclisses fabriquées exprès pour servir de surface de référence pour les relevés profilométriques;
- contrôles profilométriques et enregistrement des résultats sur microprocesseur deux fois par an, d'habitude en mai et septembre, en 1986, 1987 et 1988;
- calcul du tonnage écoulé, connaissant le nombre de trains ayant transité par chacun des sites.

La dernière étape a consisté à faire l'analyse de l'information brute obtenue, entreprise par le bureau de recherche du CN Rail et utilisant ses logiciels.

3. RÉSULTATS ET CONCLUSIONS

Méthode de la rainure témoin

Il y a eu en tout 48 moulages représentant l'état des rails tant de la file intérieure que de la file extérieure, lubrifiés ou non, avant et après le passage des trains équipés de deux types différents de bogies et dans des tronçons comportant six courbes différentes.

La recherche par cette méthode montre que les bogies à essieux orientables contribuent à réduire l'usure de la face intérieure du champignon en régime sec mais que, en régime lubrifié, aucune différence ne peut être décelée, la lubrification réduisant, semble-t-il, l'usure plus que ne le font les bogies à essieux orientables.

Échauffement des rails

Les contrôles thermométriques confirment les résultats précédents, c'est-à-dire que les bogies à essieux orientables réduisent légèrement l'usure des rails en régime sec ou lubrifié, par rapport aux essieux classiques, la lubrification, cependant, y contribuant davantage que les premiers.

Contrôles profilométriques

Les résultats de la campagne de mesurage, par site, ainsi que les relevés profilométriques successifs sont donnés dans le rapport ainsi que l'usure constatée, calculée en fonction du tonnage transité, compte tenu du meulage des rails. Le meulage des rails, qui fait partie des procédures d'entretien, s'est effectué normalement durant le temps de la recherche.

Ainsi, il sera possible de comparer ces données avec celles de contrôles ultérieurs, portant sur des rails où circulent des trains de même nature mais dont la proportion de bogies classiques et à essieux orientables peut varier.

TABLE OF CONTENTS

1. INTRODUCTION

Page No.

1.1 Project Background 1
1.2 Project Objective 1
1.3 Project Report 2

2. STUDY METHODOLOGY

2.1 Test Location 3
2.2 Witness groove Method 3
  2.2.1 Field Work 4
  2.2.2 Laboratory Analysis 6
2.3 Rail Temperature Rise Test 7
  2.3.1 Field Work 8
2.4 Profilometer Measurement 9
  2.4.1 Field Work 10
  2.4.2 Analysis of Data 14

3. MEASUREMENT RESULTS

3.1 Witness Groove Method 15
3.2 Rail Temperature Rise Test 16
3.3 Profilometer Measurement 16

4. CONCLUSIONS

4.1 Witness Groove Data 18
4.2 Rail Temperature Rise Data 19
4.3 Profilometer Measurement Data 19

APPENDIX A - TUMBLER SUB CONDENSED PROFILES

APPENDIX B - NRC REPORT - EVALUATION OF WITNESS GROOVE REPLICAS FROM THE TUMBLER RIDGE RAIL LINE STUDY

APPENDIX C - CN RAIL ANALYSIS - MEASUREMENT OF RAIL PROFILES FOR THE PERIOD MAY 1986 - SEPT. 1988 BC RAIL TUMBLER RIDGE SUBDIVISION

APPENDIX D - BC RAIL DRAWING A2/16-23855 - MODIFIED JOINT BARS

APPENDIX E - BC RAIL - RAIL GRINDING RECORDS TUMBLER SUB JUNE 1986 TO MAY 1988

LIST OF FIGURES

Page No.

1.1 Study Location and BC Rail System Map 2

2.1 Witness Groove Method 4

2.4 Rail Temperature Rise Test 8

2.6 Profilometer Measurement 10

LIST OF TABLES

Page No.

2.2 Test Train Consists 5

2.3 Test Site Locations - Witness Groove 6

2.5 Test Site Locations - Temperature Rise 9

2.7 Test Site Locations - Profilometer 11

2.8 Profilometer Test Schedule 12

2.9 Train Information for Tonnage Calculation 13

3.1 Rail Temperature Rise Data 16

3.2 Rail Grinding Information 17

1. INTRODUCTION

1.1 Project Background

This project started in April 1985 and arose from the premium truck evaluations that were underway at that time. In those truck evaluations, only wheel wear was being measured, not rail wear, due to the low number of such trucks in fleets.

In 1983 BC Rail and CN Rail acquired a large fleet of new coal cars with DR-1 self-steering trucks to run from Tumbler Ridge, in British Columbia, to the port at Prince Rupert (see Figure 1.1 Study Location and BC Rail System Map). BC Rail's 80 mile long Tumbler Subdivision had been especially built, in 1983, for the coal traffic and was laid with 115 lb. continuous welded rail (CWR), on timber ties and crushed rock ballast. Incidental to this study, but of some interest, is that the line is 50 KV electric powered railway. The fleet consisted of 9 train sets of 98 cars; 62% of the cars had self-steering or radial arm trucks and the remainder were conventional trucks. The Tumbler Subdivision carries no freight other than coal traffic.

Therefore, it was felt the Tumbler Subdivision would be a desirable location to measure rail wear to determine the anticipated reduction attributable to self-steering trucks.

1.2 Project Objectives

The objectives of the rail wear measurement project were to determine the reduction in rail wear on the Tumbler Subdivision that can be attributed to the DR-1 self-steering freight car trucks and to provide data on which rail wear cost savings can be quantified. This objective can be placed within the major goal of developing a thorough understanding of the interaction of wheels and rails, and applying that understanding to improve the safety, energy efficiency and productivity of train operations.

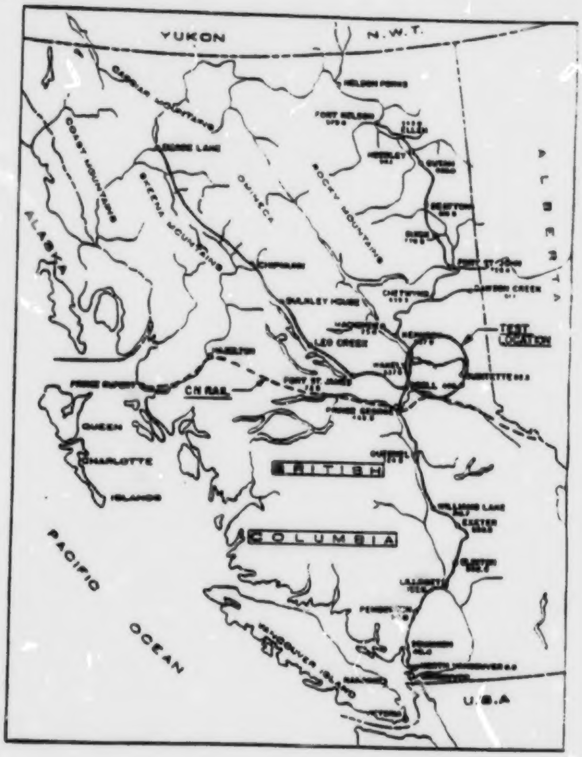

YUKON
N.W.T.
ALBERTA
ALASKA
COAST MOUNTAINS
SKEENA MOUNTAINS
ROCKY MOUNTAINS
OMINECA
CN RAIL
TEST LOCATION
QUEEN
CHARLOTTE
ISLANDS
BRITISH
COLUMBIA
PACIFIC
OCEAN
VANCOUVER ISLAND
U.S.A

Figure 1.1 Study Location and BC Rail System Map

1.3 Project Report

The objectives of the project were to be accomplished by a series of three tests, namely:

- Witness Groove Method,
- Rail Temperature Measurement, and
- Profilometer Measurement.

These tests were to be coordinated by the contractor, BC Rail, and performed with assistance from various groups such as the American Association of Railroads' Transportation Test Center (AAR/TTC), CN Rail and National Research Council (NRC). The work was carried out between April 1985 and April 1989.

This purpose of this report is to:

- summarize the activities and measurements taken over the study period,
- discuss the results of the analyses of the data, and
- draw conclusions to meet the project objectives.

2. STUDY METHODOLOGY

This section outlines the mechanics of the various measurement tests including the field work and any analysis.

2.1 Test Location

All measurements for the tests were taken on BC Rail's Tumbler Subdivision. This line consists of 80 miles of 115 lb. CWR, with curves up to and including 6 degrees and grades up to 1.5% empty and 1.2% loaded direction. Appendix A includes the condensed profile for the Subdivision. Actual test locations are more specifically described in the individual section relating to the test.

2.2 Witness Groove Method

The witness groove method used was developed by H. Ackroyd and J. Kalousek of the NRC. The method is used to determine micro-wear measurements on the rail head profile by the following methodology:

1. A hacksaw blade is used to cut a narrow transverse groove into the rail head along the gauge face and over the top running surface. Up to 3 punch marks are added as index or reference points in the groove.

2. A 1:1 casting of the groove, using a small metal mold, is made using non-shrink dental compound. Castings are made of both the high and the low rail on curves. Figure 2.1 illustrates a replica being made.

3. After the passage of a prescribed number of trains, a second replica is made of the groove.

4. Comparison of the two 1:1 replicas will show less "height" of the groove on the second casting and this is the wear for the known train tonnage. The micro-wear is measured to an accuracy of 0.0002 inch (5 micrometers) in a lab using a contour profilometer.

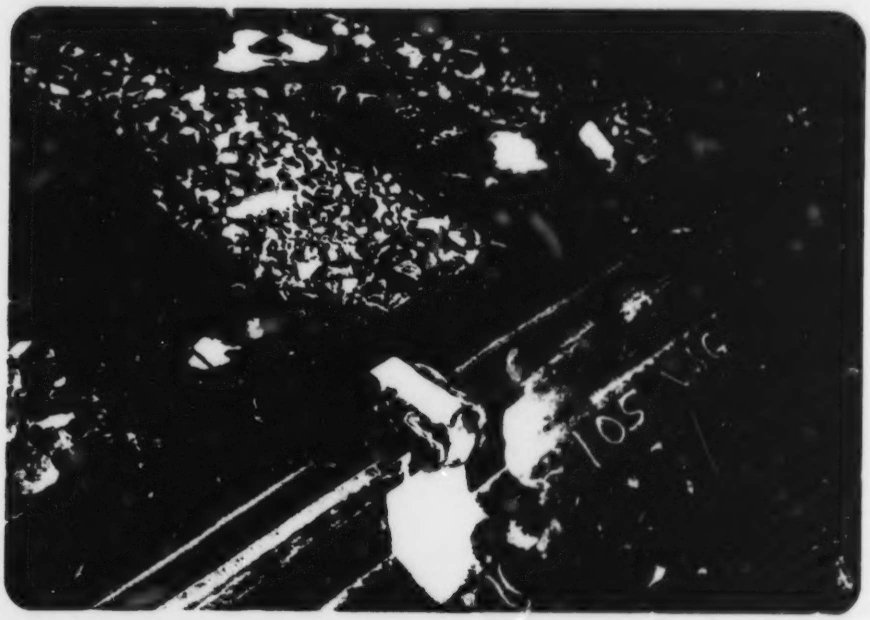


Figure 2.1 Witness Groove Method

2.2.1 Field Work

The witness groove test (and the rail temperature rise test) was scheduled for October 1985 and some replicas were actually made, however, the test was a failure as the cold temperatures of near 0 Celsius extended the normal 5-10 minute dental compound set up time to 30-40 minutes and some never set up at all. The test was accordingly rescheduled for August 1986, at which time replicas were successfully taken.

The AAR/TTC report R-693 dated March 1988 by Reiff and Mace "Effects of Rail Lubrication on Premium and Conventional Trucks on the British Columbia Railway" includes a description of the witness groove method testing.

The testing was carried out under two regimes a dry or unlubricated rail state (accomplished by shutting off all rail lubricators two weeks prior to the first run) and a lubricated state (accomplished by turning on the lubricators and by running the AAR's lube car).

Two special test train consists were set up by the BC/CN Rail Coal Coordinators. This proved to be more onerous than originally thought. The normal train consist is mixed trucks and to set up one train with just conventional trucks and another with just self-steering trucks required special switching moves which proved time consuming.

Table 2.2 provides data about the two test train consists.

Table 2.2 Test Train Consists

Regime	Trucks	Consist	Total Weight Tons
Dry	Self-Steering	4 Locos 97 Self-Steering 1 Conventional 1 AAR Lube Car 1 Caboose	13,717
Dry	Conventional	4 Locos 98 Conventional 1 AAR Lube Car 1 Caboose	13,675
Lubricated	Self-Steering	4 Locos 96 Self-Steering 1 Conventional 1 AAR Lube Car 1 Caboose	13,573
Lubricated	Conventional	4 Locos 8 Self-Steering 90 Conventional 1 AAR Lube Car 1 Caboose	13,715

The test locations were chosen to represent curvatures between 1 and 6 degrees. Curves under 4 degrees are standard carbon rail while those 4 degrees and over are a harder chrome alloy rail. Table 2.3 provides information about the test sites.

It was found that 5 passes of the test trains were sufficient to produce wear on the chrome rails, while 3 were used on the standard carbon rails.

Table 2.3 Test Site Locations - Witness Groove

Mile	Degree/Curve	Standard Carbon	Chrome
58.8	4-00	-	x
59.7	6-00	-	x
59.9	5-00	-	x
60.5	1-00	x	-
63.8	3-30	x	-
64.1	2-00	x	-

During a two week period in August 1986, the witness groove tests were carried out in conjunction with the AAR's testing. The witness groove test procedure involved the following steps, once each for the dry rail test and for the lubricated rail test:

1. The loaded test train was stopped, ready to go, at mile 71. Initial witness groove measurements were taken at all sites by the ground crews.

2. The test train completed a normal run to mile 58 and stopped and then backed down to mile 71.

3. Another normal run was then made to mile 58. With this third passage of the train witness groove castings were made on the standard carbon rail sites.

4. The train then backed down to mile 71, stopped and then completed its regular run towards the coal port. With the fifth passage of the train the final replicas were made at the chrome rail test sites.

2.2.2 Laboratory Analysis

During the period May to August 1987 the replicas were analyzed at the NRC's Mechanical Labs in Vancouver, B.C. using a Mitutoyo Contracer contour profilometer. The report dated September 1987 by M. Tso and J. Kalousek, entitled "Evaluation of Witness Groove Replicas from the Tumbler Ridge Rail Line Study" describes in detail the analyses carried out and this report is included as Appendix B.

The laboratory techniques employed were generally as follows:

1. The before and after replicas were carefully aligned in the vice of the contour profilometer.
2. Reference punch marks or other distinct markings were identified to ensure the groove "height" was measured in the same location on both replicas.
3. The groove was traced at the gauge face and the top of rail.

2.3 Rail Temperature Rise Measurement

The friction between the rail and the wheel of a passing train results in an increase in the rail head temperature. With two trains identical in speed, weight, car type, profile match, curve and superelevation, except for differing trucks (conventional and self-steering) the temperature rise after the passage of a train is directly proportional to the friction produced. The self steering truck would presumably produce less friction and less of a temperature rise than a similar train of conventional trucks. This test measured this temperature rise.

Only four sites could be monitored due to limited number of units available. Two systems for monitoring rail temperature were used. The 6 degree curve location had a continuous Temperature Data Recorder in place that recorded temperature on graph paper. The other three sites were equipped with thermocouples leads to the rail head connected to a portable temperature readout unit. Figure 2.4 illustrates a portable unit in place. The thermocouple is attached to the high rail of the curve, about mid-rail height.

At sites with a portable unit the observer notes the rail temperature just prior to the passage of the test train then watches for and records the peak temperature after the passage of the train. This peak usually occurs about 1 to 2 minutes after the last car has gone by.

2.3.1 Field Work

In October 1985, rail temperature rise testing was carried out, but due to the cold weather which also effected the witness groove castings, meaningful results could not be

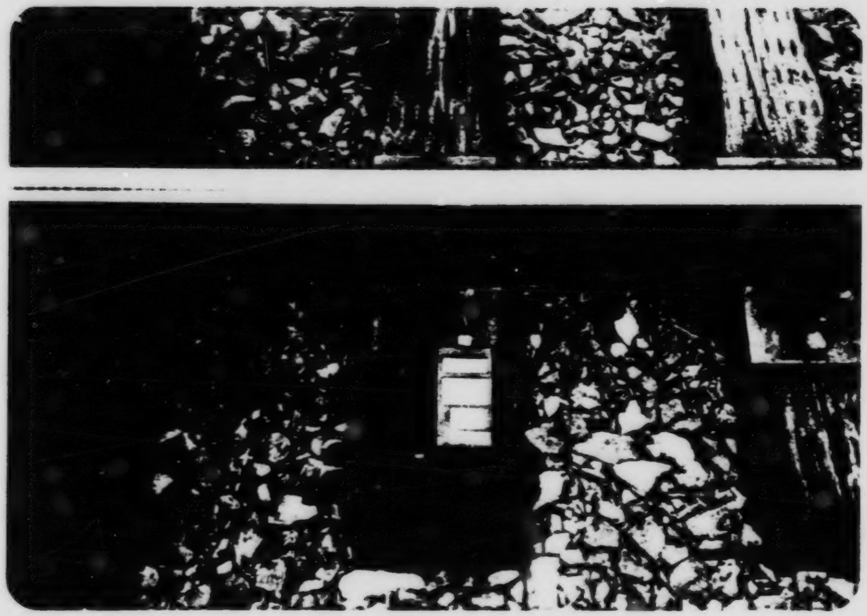


Figure 2.4 Rail Temperature Rise Test

obtained. The cold ambient air temperatures made it difficult to obtain a steady state temperature reading.

The rail temperature rise test was done in conjunction with the witness groove testing and was carried out in August 1986. The same trains used for that test, under dry and lubricated conditions were used to monitor temperature rise. Test train consists are included in Table 2.2, and included an all self-steering truck train and an all conventional truck train.

Table 2.5 Test Site Locations - Temperature Rise, provides information as to the location of the curves where measurements were taken.

Only uphill data was used as it was found that in a downgrade movement wheel braking raised the rail head temperature more than in an upgrade passage.

Table 2.5 Test site Locations - Temperature Rise

Mile	Degree/Curve	Portable Unit	Continuous
58.8	4-00	x	-
59.7	6-00	-	x
59.9	5-00	x	-
63.8	3-30	x	-

The rail temperature test was performed by the same ground crew as were carrying out the witness groove tests; the same train sets (see Table 2.2) were employed; the testing was done again under the dry rail and later under a lubricated rail condition. The procedure carried out in August 1986, was generally as follows:

1. The loaded test train was stopped, ready to go, at mile 71, and personnel took rail temperature reading.
2. After the test train had passed the site on it's uphill move, the peak or maximum rail temperature was recorded.
3. On the downgrade move no temperature was recorded. Temperature rise was again recorded on each of the subsequent uphill passages of the test train.

2.4 Profilometer Measurement

The rail profilometer testing was carried out with CN Rail's assistance using their profilometer and data analysis facilities.

This method of measuring rail wear involved plotting the rail head profile twice a year for three years. Figure 2.6 shows the profilometer being used. Tonnages were to be recorded from one measurement period to the next for the particular mix of trucks on the subdivision which in this case is 62% self-steering trucks and 38% conventional type. The rail wear measured as head loss is then to be compared to a similar subdivision with like traffic but a different mix of trucks to determine to what extent the self-steering trucks wear the rail less.

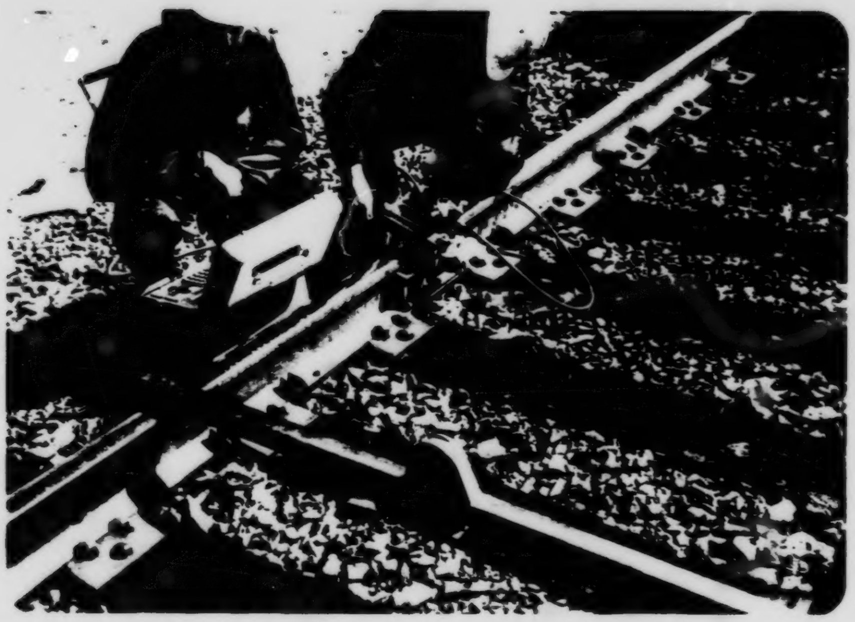


Figure 2.6 Profilometer Measurement

This project has recorded the data for the Tumbler Subdivision for the period May 1986 to September 1988. All this data is included in this report in Appendix C "Measurement of Rail Profiles for the Period May 1986 - Sept. 1988" by CN Rail, dated January 1989. This is for comparison when a new suitable location is found.

2.4.1 Field Work

The field work for this measurement method involved four steps and these are discussed in this section.

1. Test Site Selection:

   Measurement sites were to include uphill, downhill and level grades for loaded trains, and both right-hand and left-hand curves of 1 to 6 degrees and tangent sections. This resulted in 35 curves and 3 tangent locations. Each curve had 6 test spots, 3 on the high rail and 3 on the low rail at the 1/3, 1/2 and 2/3 points on the curve. Tangents had 2 spots, on the east and west rail. A total of 216 spots were therefore selected. Table 2.7 lists these locations.

Table 2.7 Test Site Locations - Profilometer

UPHILL				DOWNHILL				LEVEL			
Mile	R/LH	Deg.	Grade %	Mile	R/LH	Deg.	Grade %	Mile	R/LH	Deg.	Grade %
49.9	LH	1-00	1.2	32.1	RH	1-00	1.5	13.5	RH	1-00	0.4
60.5	LH	1-00	0.8	32.0	LH	1-00	1.5	12.3	LH	1-00	0.4
52.3	RH	2-00	1.2	29.8	RH	2-00	1.4	64.1	RH	2-00	0.5
52.5	LH	2-00	1.2	24.1	LH	2-00	1.4	65.1	LH	2-00	0.7
								8.0	RH	3-00	0.2
								67.2	LH	3-00	0.1
55.9	RH	3-30	1.1	25.3	RH	3-30	1.4	5.2	RH	3-30	0.0
55.6	LH	3-30	1.1	17.8	LH	3-30	1.4	7.1	LH	3-30	0.0
57.8	RH	4-00	1.0	29.4	RH	4-00	1.3	71.2	RH	4-00	0.0
58.9	LH	4-00	1.0	29.1	LH	4-00	1.3	3.7	LH	4-00	0.2
52.9	RH	5-00	1.0	19.5	RH	5-00	1.3	72.1	RH	5-00	0.3
56.2	LH	5-00	1.0					74.2	LH	5-00	0.0
58.4	RH	6-00	0.9	28.3	RH	6-00	1.3				
58.0	LH	6-00	1.2	28.1	LH	6-00	1.3				
57.5	--	TAN.	1.2	30.0	--	TAN.	1.5	61.0	--	TAN.	0.0

Note: RH = Right Hand curve in direction of increasing mileage
LH = Left Hand curve in direction of increasing mileage
TAN = Tangent location.

2. Installation of Machined Joint Bars:

Special modified joint bars had to be installed at the 216 test spots to provide the surface to which all readings were to be referenced. These bars were physically cut from a standard 6 hole 115 joint bar and machined as shown on BC Rail drawing A2/16-23855 and included as Appendix D.

Over the test period, the bars had to be kept secured and were greased on the machined surface and in the slots after each test. Despite these precautions the bars did loosen, some were hit and damaged by track equipment and the surfaces became pitted and corroded, with the consequence that accuracy decreased. At the end of the test period the bars were scrapped.

3. Take Field Profile Readings:

The test readings were planned to be taken twice per year over the three year period. The test schedule is summarized in Table 2.8.

Table 2.8 Profilometer Test Schedule

Test		Date	Remarks
1	1986	May 26-Jun 2	Gathered all rail and site data
2	1986	Sep 22-26	Test completed
3	1987	Jun 8-9	Unable to complete test due to equipment failure
4	1987	Sep 14-18	Test completed
5	1988	May 30-Jun 3	Test completed
6	1988	Sep 6-10	Test completed

4. Record Train Traffic Data:

The number of trains over each test spot had to be recorded to be able to calculate tonnages. Fortunately, train records are kept by the CN/BC Rail Coal Coordinator. A summary of train information is found in Table 2.9.

From this information and data, cumulative tonnages were calculated to coincide with the test dates. This required a knowledge of the train operation. Quintette traffic operates between mile 0 and 80; Teck trains operate between mile 0 and 69.9; each train operates with 98 cars, 2 engines and 1 caboose; 2 helper engines push the train from mile 80 or 69.9 to mile 43.0; helper engines start and terminate at the shops at mile 73.3. For each loaded train out, an empty train had to come in.

Appendix C includes the computed tonnages based on this data and information.

Table 2.9 Train Information for Tonnage Calculation

			No. of loaded trains			Accumulated
Year	Month	Test	Quintette	Teck	Total	Tonnage
1986	May	1	54	16	70	8.37 MGT
	Jun		53	14	67	
	Jul		56	15	71	
	Aug		59	18	77	
	Sep	2	39	16	55	12.60 MGT
	Oct		45	16	61	
	Nov		46	14	60	
	Dec		45	16	61	
1987	Jan		47	15	62	
	Feb		41	14	55	
	Mar		38	15	53	
	Apr		40	15	55	
	May		42	17	59	
	Jun	3	42	16	58	19.80 MGT
	Jul		20	17	37	
	Aug		34	16	50	
	Sep	4	49	16	65	23.10 MGT
	Oct		52	14	66	
	Nov		47	16	63	
	Dec		36	20	56	
1988	Jan		43	15	58	
	Feb		41	17	58	
	Mar		51	17	68	
	Apr		43	15	58	
	May	5	41	16	57	30.70 MGT
	Jun		49	15	64	
	Jul		28	19	47	
	Aug		40	15	55	
	Sep	6				33.20 MGT

Notes:
- tare weight BCNE (self-steering) cars = 25.5 tonnes
- tare of CN (conventional) cars = 26.0 t.
- gross average of loaded car = 118.05 t.
- self-steering trucks = 62% of tonnage
- conventional trucks = 38% of tonnage
- gross per train less engines and caboose = 11560 t.
- engine weight = 178.7 t., caboose = 36.0 t.
- Accumulated Tonnage is in million gross tons (MGT) at the test date, at sites between mile 49.9 & 67.2. Refer to Appendix C for tonnages at other sites.

2.4.2 Analysis of Data

The final stage for the profilometer measurement was the analysis of all the raw data collected over the three year period of the study. This was carried out by CN Rail's Technical Research personnel in Montreal, using their software package "RS/1 Graphics and Statistical Analysis". This information is included in Appendix C and has two components, namely:

1. a graphical plot of rail head profile for each period,
2. rail wear graphs showing:
    - rail head height loss vs. tonnage
    - rail head area loss vs. tonnage
    - gauge width loss vs. tonnage
    - gauge area loss vs. tonnage

3. MEASUREMENT RESULTS

This section summarizes the results of the field work and the laboratory and data analyses stages of the study.

3.1 Witness Groove Method

The replicas taken for the two types of trains (all conventional trucks and all self-steering trucks) under dry and lubricated rail conditions, were analyzed in the contour profilometer at the National Research Council's Mechanical Laboratory in Vancouver in 1987. Altogether there were 48 replicas to measure, representing 6 curves, 2 lubrication states, 2 rails (the high and low rail of each curve), and 2 castings (one before and one after the train passage).

A few problems were encountered accomplishing the replica analysis. Some of the castings had no grooves or the grooves were broken off. On the dry state replicas the gauge face had gouging wear which produced slivers of metal covering the groove. In these instances, special care had to be taken performing the measurement or assumptions had to be made.

Complete results are included in Appendix B of this report (the NRC report). The results are presented in the form of tables, figures and graphs.

The tables show actual wear in millimetres for the two types of trucks (conventional and self-steering) and for lubricated or dry rail condition, and for each degree of curve at different locations on the low and high rail. On the high rail (HR), wear is measured on the head (top), on field edge (corner) and on the gauge. On the low rail (LR), the wear is measured on the head (top). In addition to the wear, the flow is measured and the net wear is calculated from "wear" minus "flow". The "specific wear" is calculated from net wear divided by the tonnage of the train passes (0.068 MGT).

The figures are the actual tracings of the groove "heights", on the replicas, taken by the contour profilometer.

The graphs are plots of wear versus degree of curve for the different types of trucks and rail lubrication state and they show all the available wear data in graphical form.

3.2 Rail Temperature Rise Measurement

The rail temperature data was collected by ground crews at the same time as the witness groove castings were made in conjunction with the AAR's energy testing in 1987. All the data was collected by the AAR personnel and included in their report.

Table 3.1 summarizes the temperature rise data and is taken from AAR Report R-693.

Table 3.1 Rail Temperature Rise Data *

	Dry Rail		Lubricated Rail	
Degree Curve	Conventional **Trucks	Radial Trucks	Conventional Trucks	Radial Trucks
3-30	19.3	14.6	6.2	7.9
4-00	10.25	11.6	6.0	5.4
5-00	9.6	7.5	4.7	2.9
6-00	28.75	26.0	9.6	9.2

Notes: * Temperature in degrees Fahrenheit.
** Temperature rise for dry conventional is average of first and third pass due to application of lubricant in error at end of first train pass. All other temperature rises are average for three passes.

3.3 Profilometer Measurement

The data collected over the period May 1986 to September 1988, is summarized and included in Appendix C of this report. Included is the complete data for each "site", and the plots of original rail head profile and subsequent profiles on the same graph. This is to allow comparison to data to be gathered in the future for rail having similar service from standard 100-ton 3-piece freight car trucks.

The rail in service on the Tumbler Subdivision was ground several times during the test period which will also contribute to the change in head profile. Following Table 3.2 Rail Grinding Information, provides information concerning amount of steel removed per pass. Appendix E contains the detailed grinding records for information purposes.

Table 3.2 Rail Grinding Information

	Position on Rail		
	Gauge	Head	Field
Steel Removed per Pass in 1000's inch	20	8	6

Grinding dates were: June 24 to July 24, 1986; May 13 to 31, 1987; October 4 to 18, 1987; and May 14 to 31, 1988.

Several problems and difficulties were encountered taking the measurements which contributed to their overall accuracy. Some of the problems were with the equipment. In many instances the rainy weather caused the dial gauges to operate erratically. The 50 KV current from the overhead contact system played havoc with the microprocessor causing loss of display and overloading of eproms. Special grounding and shielding of the equipment was required which alleviated some of the problems. Many of the machined bars may have shifted during the 2 1/2 years of the testing despite periodic tightening. Some of the bars were hit by snow plows, track maintenance equipment, and the grinding train. Corrosion and pitting of the machined surface of the bars was evident even with liberal greasing after every reading.

4. CONCLUSIONS

This section discusses the results and outlines the conclusions that can be drawn from the data.

4.1 Witness Groove Data

Appendix B (the NRC Evaluation Report) provides a detailed discussion of the results, however, a summary is provided here for reference purposes. The following results and conclusions are made from the witness groove data:

- There was higher head wear on curves 1 to 3 degrees than on curves 4 to 6 degrees. This may be accounted for by the use of premium rail on the higher degree curves.
- The gauge face wear on 3, 5 and 6 degree curves was nearly twice the wear on dry rail with conventional trucks as compared to dry rail with self-steering trucks.
- The 4 degree curve exhibited less wear with conventional trucks than with self-steering trucks. (The temperature rise test confirmed the same result.) The reason for this is not known.
- Lubrication diminished gauge face wear. On the 6 degree curve, no wear was measured under lubricated conditions neither for conventional nor self-steering trucks.
- Under lubricated conditions, the top of head rail wear rate was slightly higher with self-steering trucks than with conventional trucks. (It is thought this may be due to the sequence of testing.)

The general conclusion drawn from the witness groove results is that self-steering trucks reduce gauge face wear under dry rail conditions. Under lubricated rail conditions there is no wear difference between conventional and self-steering trucks. It appears that lubrication reduces wear more than self-steering trucks.

4.2 Rail Temperature Rise Data

Temperature rise is a measurement of total energy placed into the rails by the trucks. The assumption is made that wear and temperature rise are directly proportional, that is, the greater the temperature rise the higher the rail wear rate.

The data from Table 3.1 indicates the following:

- For both dry and lubricated rail conditions, self-steering trucks show a slight reduction in wear as the temperature rise is usually less than that of conventional trucks.
- The actual temperature rise is much less under lubricated rail conditions than under dry rail conditions, regardless of truck type.

The general conclusion drawn from the temperature rise data is very similar to that from the witness groove data.

The conclusion is that self-steering trucks reduce rail wear slightly under dry and lubricated rail conditions. Lubrication, however, reduces wear more than self steering trucks.

4.3 Profilometer Measurement Data

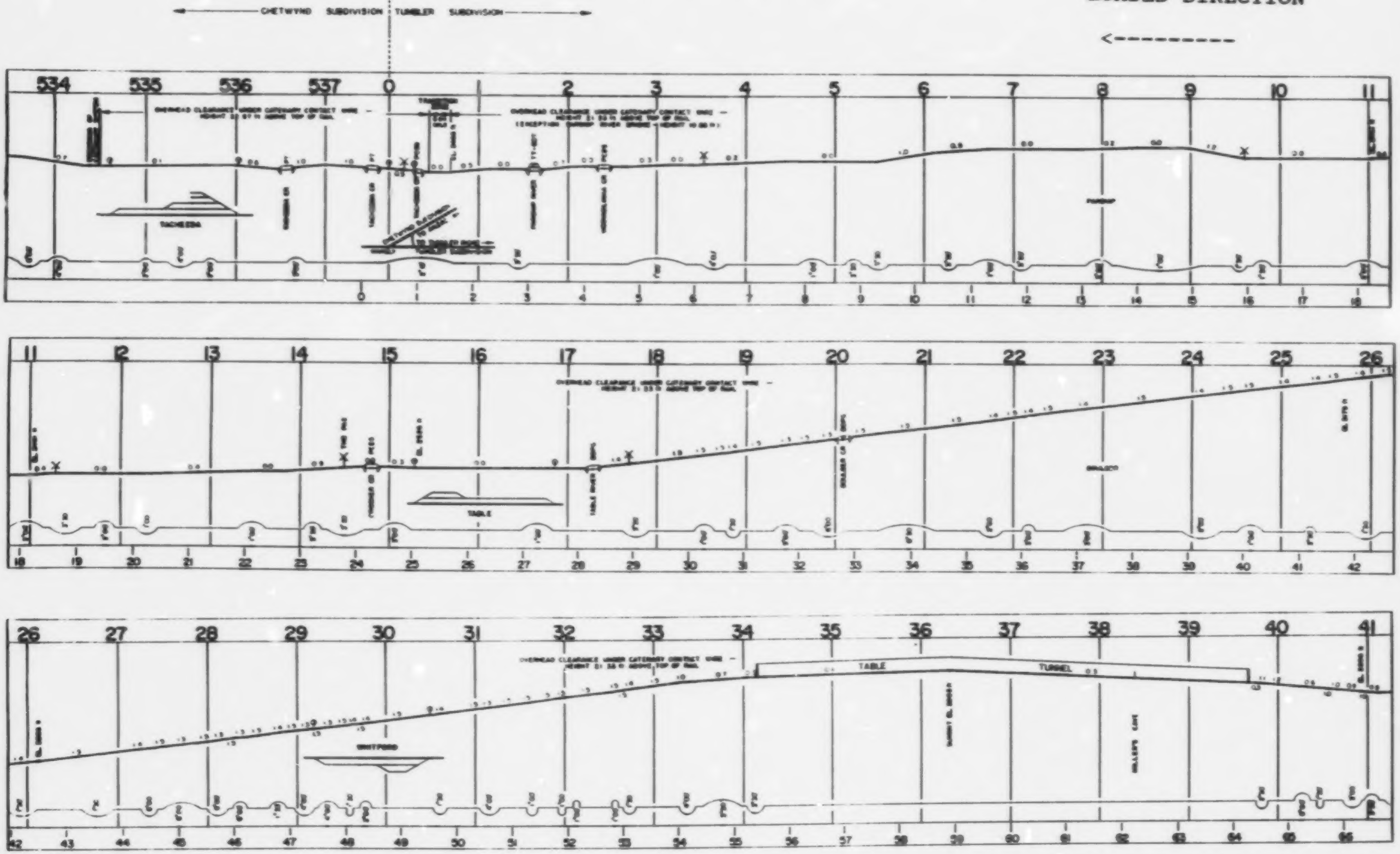
No conclusions can be drawn from the profilometer measurement results, at this time. This will be possible when comparable data is obtained from a railway location with similar operating conditions except for a different mix of self-steering and conventional trucks.

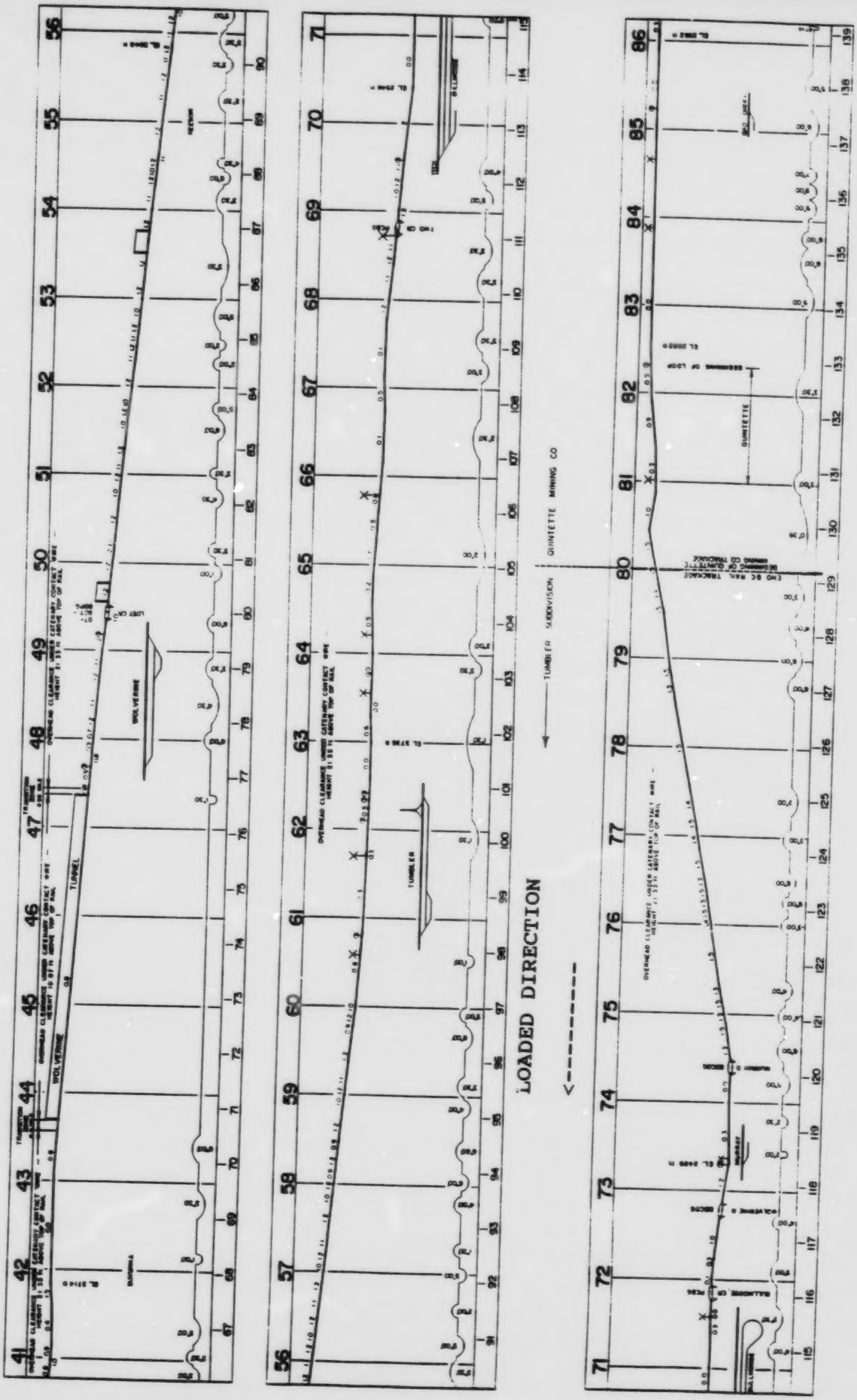
APPENDIX A

TUMBLER SUB CONDENSED PROFILE

LOADED DIRECTION

<----------


CHETWYND SUBDIVISION
TUMBLER SUBDIVISION
534
535
536
537
0
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
OVERHEAD CLEARANCE UNDER CATENARY CONTACT WIRE
TACHEEDA
TABLE
WHITFORD
TUNNEL


WOLVERINE
TUNNEL
TUMBLER
TUMBLER SUBDIVISION
QUINTETTE MINING CO
QUINTETTE
BEGINNING OF LOOP
END BC RAIL TRACKAGE
LOADED DIRECTION
OVERHEAD CLEARANCE UNDER CATENARY CONTACT WIRE

APPENDIX B

EVALUATION OF WITNESS GROOVE REPLICAS FROM THE TUMBLER RIDGE RAIL LINE STUDY

WRITTEN AND SUBMITTED BY:
MARCUS TSO AND JOE KALOUSEK

SEPTEMBER 4, 1987

National Research Council Canada
Conseil national de recherches Canada

Division of Mechanical Engineering
Division de génie mécanique

File Reference

8 September 1987

Walter Ament, P.Eng.
Project Engineer
Engineering Department
BC Rail
P.O. Box 8770
Vancouver, B.C.
V6B 4X6

Dear Walter,

Enclosed is a draft copy of the evaluation of witness groove replica report. Although it gives primarily a summary of measured data I also added a brief discussion of the results.

Should you wish to discuss the results in more detail or should a need arise for any additional readings from the replicas to be made please don't hesitate to call.

With best regards ,

Sincerely yours

Joe Kalousek

J. Kalousek

cc: R.P. Reiff (TTC, Pueblo)
D.W. Dibble (Transports Canada)

3650 Wesbrook Mall
Vancouver, B.C.
V6S 2L2

Telephone (604) 666-2602
Telex 04-55141

Canada

Evaluation of Witness Groove Replicas
from the
Tumbler Ridge Rail Wear Study

Written and submitted by:
Marcus Tso and Joe Kalousek
September 4, 1987

TABLE OF CONTENTS

1.0 INTRODUCTION 1

1.1 BACKGROUND 1

1.2 SUMMARY OF WITNESS GROOVE METHOD 1

1.3 COLLECTION OF REPLICAS 2

2.0 LABORATORY TECHNIQUES 2

3.0 RESULTS 4

4.0 DISCUSSION AND CONCLUDING REMARKS 5

APPENDIXES 9

1.0 INTRODUCTION

1.1 BACKGROUND

In August of 1986 the British Columbia Railroad (BCR) in cooperation with the Association of American Railroad (AAR) conducted a series of tests on the Tumbler Ridge Subdivision of BCR. The objective of these tests was to evaluate the efficiency of lubrication and radial truck in reducing rail wear and energy consumption for 100 ton capacity car trains operating in the 20-35 MPH range.

These tests generated five data bases: train energy, lateral/vertical rail forces, rail temperature, car wheel sets angle of attack, and rail wear.* The first four data bases have already been evaluated by Reiff and Mace in their draft report entitled "Premium Truck/Lubrication Energy Tests on BCR".

This report is concerned with evaluation of rail wear data. It intends to provide the missing rail wear data which should be incorporated in the Reiff & Mace Report.

1.2 SUMMARY OF WITNESS GROOVE METHOD**

The witness groove method which evaluates the amount of material worn from rail surfaces utilizes a shallow "groove" sawn with a hack saw onto these surfaces in the direction perpendicular to that of travel (transverse direction). At least two epoxy replicas of rail surface are taken before and after the passage of an individual or group of several trains. Groove profile measurements at several locations are then made from the replicas in the laboratory using the contour profilometer (Mitutoyo Contracer). Since the inside of the groove is not subjected to wear it is possible, using the traces from the Contracer, to determine the height of the material worn with the accuracy of or better than 5 micrometers (0.0002 inch).

---

* p.3 Rieff and Mace

** Adopted from "Wear Measurement by Witness Groove Method" - H. Ackroyd and J. Kalousek, 1983.

1.3 COLLECTION OF REPLICAS

Plastic replicas of rail surfaces were taken for six curves with curvatures ranging from 1 to 6 degrees, both high and low rails. The tests included trains with standard trucks and radial trucks, and two lubrication regimes - dry and lubricated. Altogether 48 sets of replicas were taken. Each set had two replicas of the rail surface - before and after five train passes - an equivalent of about 0.068 MGT.

2.0 LABORATORY TECHNIQUES

In order to obtain reasonably accurate wear data, the before and after replicas had to be carefully aligned in the vice of the contour profilometer. To achieve that, a plane parallel to the top running surface was identified by measurements and marked by two parallel lines on each side of each replica. Similar measurements and line markings were made for gauge corners and gauge faces on all high rail replicas (see Figure 0-A).

In order to ensure that the witness groove heights* were measured at precisely the same location on the before and after replicas, the reference punch mark closest to measurement area was used to identify the individual measurement points on the witness groove (see Figure 0-B). In the absence of reference punch marks, grinding marks or other identifiable features were used to locate the measurement points. This latter technique of locating the measurement points was more time consuming and less accurate.

Some replicas either did not have grooves at the gauge face or had grooves broken off at their bases. In the dry wear regime the gauge face in sharper curves experienced gouging wear - a severe form of adhesive wear. This produced a surface metal flow generating slivers of metal partially covering the witness grooves. These slivers were responsible for tearing off the acrylic grooves at gauge locations. Therefore, the readings of gauge face wear had to be taken by superimposing the before and after transverse rail head profiles. The superposition was accomplished by identifying three or more locations on the gauge corner of the high rail at which the before and after readings were taken (see for example Figures 6-D and 6-E).

---

* For simplicity, the ridge-like part of the replica shall be loosely referred to as the witness groove, even though it is strictly speaking not a "groove". Therefore, the word "height" is used instead of "depth" to describe the groove.

3.0 RESULTS

The summary of numerical values of wear rates in mmXmm/(5 train passes) are shown in Tables 1-A, 1-B, 1-C, and 1-D. Each table shows 4 columns, one for wear, plastic flow, net wear (i.e. wear minus flow), and specific wear (i.e. net wear/MGT).* The specific wear rates at gauge faces were also converted back into recess of material rate in mm/ MGT.

The wear profiles on top running surfaces of both rails are shown in Figures 1 to 6. The figure numbers correspond to the degree of curvature, i.e.

Figure	Contents
1-A	1 degree curve low rail top surface wear
1-B	1 degree curve high rail top surface wear
1-C	1 degree curve high rail gauge corner wear
2-A	2 degree curve low rail top surface wear
2-B	2 degree curve high rail top surface wear
2-C	2 degree curve high rail gauge corner wear
	* * * ETC. * * *
6-D	6 deg. curve high rail gauge face wear (dry-std)
6-E	6 deg. curve high rail gauge face wear (dry-rad)
6-F	6 deg. curve high rail gauge face wear (lub-std)
6-G	6 deg. curve high rail gauge face wear (lub-rad)

---

* As will be discussed in the next section, specific wear and recess wear columns are there for information purpose only, and should not be construed as representative rates of material removable per MGT.

Most figures of locations which showed no wear are not included (e.g. 1 degree curve gauge faces, etc...). Figures 7-A to 7-D show all the available wear data in graphical form. The scales in Figure 7-A to 7-C are identical to facilitate the cross correlation of data by superimposing the graphs.

4.0 DISCUSSION AND CONCLUDING REMARKS

It is important to realize at the outset that rail-wheel wear is affected by a large number of variables. The most important ones were mentioned in the Reiff & Mace Report. In order to make sense of the presented data which seem to be all over the place (see Figures 7-A to 7-D), two additional important influencing factors must be mentioned.

Firstly, both high and low rail were contour ground prior to the tests. Therefore, the wear bands on the top surfaces of both high and low rails were only about 1 to 1.5 inch wide, with unworn grinding marks on gauge and field sides of both rails. However, in sharper curves, the gauge face wear extended into the gauge corner. Secondly, two types of rail metallurgy were present. The lower curvatures (1 to 3 degrees) had an intermediate premium rail (approximately 320 BHN) installed, while the higher curvatures (4 to 6 degrees) had microalloyed head harden rail (approximately 380 BHN) installed.

When the Tumbler Ridge wear data are compared with FAST data, one finds that the dry gauge face wear rates measured at Tumbler Ridge were roughly an order of magnitude larger than those measured at FAST. The observed differences in wear rates between the Tumbler Ridge and FAST tests could most plausibly be explained as follows: The Tumbler Ridge freshly ground rails were in the "wear in" process, while the FAST wear data were reflecting the "steady-state" wear, during which rail and wheel profiles were both worn into conformal profiles.

On the other hand, the presence of two different types of rail metallurgy at the test site explained the general drop in wear rates on top running surfaces of low and high rails (see Figure 7-A and 7-B). One can observe that the lower curvatures (1 to 3 degrees) had a generally higher wear rates than the higher curvatures (4 to 6 degrees). With respect to gauge face wear, in addition to the rail metallurgy effect, the difference between the dry-standard and dry-radial is discernable. The 3, 5, and 6 degree curves experienced nearly twice as much gauge face wear* in the dry-standard scheme as compared with the dry-radial scheme. The 4 degree curve behaved somewhat anomalously since the standard trucks showed a lower gauge face wear than the radial trucks. Although no reason for this behavior can be offered at this stage, it should be pointed out that the temperature rise data shown in Table 4 of the Reiff & Mace Report show the same trend. Thus the wear data and the temperature data appear to be consistent. Additional agreement between the temperature rise data and wear measurements could be observed in the

---

* In terms of cross section area.

5 degree curve for which both temperature and wear data showed atypically low values.

With respect to rail lubrication, the wear measurements clearly indicate the superior efficacy of lubricant to diminish the gauge face wear. As shown in Figures 6-F and 6-G, no wear was measured by superposition of transverse traces of rail profiles. The gauge face wear surfaces were extremely rough from previous dry tests, and some wear must have taken place at the asperity peaks. Nevertheless, no wear was measured within the accuracy limit of the measurement techniques used. Thus, with the exception of plastic flow, the gauge face wear for lubricated-standard and lubricated-radial test runs should be considered as negligible and no conclusion should be made with respect to the effectiveness of truck design in reducing the gauge face wear in the lubricated environment.

A somewhat similar situation was observed in the case of top surface wear rates. In fact the top surface wear rates in lubricated-radial were in some cases higher than the wear rates in lubricated-standard tests. This can be attributed to the sequence of the tests (i.e. lubricated-radial test runs preceded the lubricated-standard test runs, and there was a gradual migration of lubricant on to the top running surface of both rails during these runs).

Based on the above observations it is obvious that lubrication is more effective in preventing both gauge face and top surface wear than the usage of radial trucks. Yet, the Reiff &

Mace data show that the radial truck had the lowest energy requirement for either dry or lubricated rails. This is not surprising since only a small portion of the total energy requirement is used to generate wear particles. Therefore, lubrication is more effective in reducing wear, while radial trucks are more efficient in reducing the energy consumption of the locomotives.

APPENDIXES

TABLE 1-A

DRY-STANDARD

CURVATURE (degrees)	LOCATION	WEAR (mmXmm)	FLOW (mmXmm)	NET WEAR (mmXmm)	"SPECIFIC WEAR" (mmXmm/MGT)	RECESS (mm/MGT)
1	HR TOP	2.749	0.000	2.75	40.21	
2		1.997	0.000	2.00	29.21	
3		1.895	0.000	1.89	27.71	
4		0.567	0.000	0.57	8.30	
5		0.450	0.000	0.45	6.58	
6		0.653	-0.003	0.65	9.51	
1	HR CORNER	0.271	0.000	0.27	3.96	
2		0.537	-0.022	0.51	7.53	
3		0.586	-0.001	0.58	8.55	
4		0.123	0.000	0.12	1.80	
5		0.470	0.000	0.47	6.88	
6		0.576	-0.173	0.40	5.90	
1	HR GAUGE	0.421	0.000	0.42	6.16	0.44
2		0.000	0.000	0.00	0.00	0.00
3		2.242	0.000	2.24	32.78	2.34
4		2.533	0.000	2.53	37.05	2.67
5		1.493	0.000	1.49	21.84	1.84
6		7.088	0.000	7.09	103.66	7.06
1	LR TOP	2.188	0.000	2.19	32.00	
2		2.208	0.000	2.21	32.30	
3		2.462	0.000	2.46	36.01	
4		1.558	0.000	1.56	22.78	
5		1.490	0.000	1.49	21.79	
6		1.232	-0.029	1.20	17.59	

TABLE 1-B

DRY-RADIAL

CURVATURE (degrees)	LOCATION	WEAR (mmXmm)	FLOW (mmXmm)	NET WEAR (mmXmm)	"SPECIFIC WEAR" (mmXmm/MGT)	
1	HR TOP	1.84	0.00	1.84	26.89	
2		0.93	0.00	0.93	13.50	
3		1.60	0.00	1.60	23.32	
4		0.67	0.00	0.67	9.78	
5		0.69	0.00	0.69	10.06	
6		0.71	0.00	0.71	10.37	
1	HR CORNER	0.09	0.00	0.09	1.25	
2		0.19	0.00	0.19	2.72	
3		0.65	0.00	0.65	9.51	
4		0.33	0.00	0.33	4.83	
5		0.64	0.00	0.64	9.33	
6		1.23	0.00	1.23	17.87	
						RECESS (mm/MGT)
1	HR GAUGE	0.46	0.00	0.46	6.65	0.76
2		0.00	-0.65	-0.65	-9.51	-1.02
3		0.93	0.00	0.93	13.61	0.98
4		3.31	0.00	3.31	48.31	3.26
5		0.62	0.00	0.62	9.05	1.67
6		4.15	0.00	4.15	60.56	4.20
1	LR TOP	2.40	0.00	2.40	35.01	
2		1.11	0.00	1.11	16.12	
3		1.28	0.00	1.28	18.68	
4		0.91	0.00	0.91	13.32	
5		0.73	0.00	0.73	10.60	
6		1.11	0.00	1.11	16.13	

TABLE 1-C

LUBRICATED-STANDARD

CURVATURE (degrees)	LOCATION	WEAR (mmXmm)	LOW (mmXmm)	NET WEAR (mmXmm)	"SPECIFIC WEAR" (mmXmm/MGT)	
1	HR TOP	0.917	0.000	0.92	13.37	
2		0.082	-0.614	-0.53	-7.76	
3		0.336	-0.065	0.27	3.95	
4		0.411	-0.029	0.38	5.57	
5		0.248	0.000	0.25	3.62	
6		0.428	-0.023	0.43	6.25	
1	HR CORNER	0.192	0.000	0.19	2.80	
2		0.242	0.000	0.24	3.53	
3		0.178	-0.017	0.16	2.35	
4		0.055	-0.089	-0.03	-0.50	
5		0.041	-0.008	0.03	0.47	
6		0.016	-0.200	-0.18	-2.69	
						RECESS (mm/MGT)
1	HR GAUGE	0.000	-1.083	-1.08	-15.79	-1.16
2		0.000	-1.068	-1.07	-15.57	-1.53
3		0.000	-0.461	-0.46	-6.72	-0.51
4		0.000	-0.259	-0.26	-3.78	-0.25
5		0.450	0.000	0.45	6.56	0.51
6		0.000	-0.171	-0.17	-2.49	-0.18
1	LR TOP	0.780	-0.144	0.64	9.28	
2		0.185	-0.179	0.01	0.08	
3		0.285	-0.729	-0.44	-6.47	
4		0.433	-0.126	0.31	4.48	
5		0.362	-0.016	0.35	5.04	
6		0.053	-0.228	-0.17	-2.55	

TABLE 1-D

LUBRICATED-RADIAL

CURVATURE (degrees)	LOCATION	WEAR (mmXmm)	FLOW (mmXmm)	NET WEAR (mmXmm)	"SPECIFIC WEAR" (mmXmm/MGT)	
1	HR TOP	2.11	0.000	2.105	31.02	
2		1.34	0.000	1.335	19.67	
3		0.93	0.000	0.928	13.67	
4		0.86	0.000	0.858	12.65	
5		0.11	-0.009	0.104	1.53	
6		0.12	0.000	0.095	1.41	
1	HR CORNER	0.06	-0.008	0.049	0.72	
2		0.12	0.000	0.124	1.82	
3		0.18	0.000	0.177	2.61	
4		0.01	0.000	0.011	0.17	
5		0.11	-0.080	0.028	0.41	
6		0.07	0.000	0.070	1.04	
						RECESS (mm/MGT)
1	HR GAUGE	0.000	0.000	0.000	0.01	0.07
2		0.000	0.000	0.000	0.00	0.00
3		0.001	0.000	0.001	0.01	0.09
4		-0.001	0.000	-0.001	-0.02	-0.16
5		0.002	0.000	0.002	0.04	0.39
6		-0.002	0.000	-0.002	-0.03	-0.29
1	LR TOP	------	------	------	------	
2		1.93	0.000	1.933	28.49	
3		1.15	-0.289	0.858	12.64	
4		0.22	-0.040	0.182	2.68	
5		0.42	-0.148	0.270	3.98	
6		0.44	0.000	0.438	6.45	

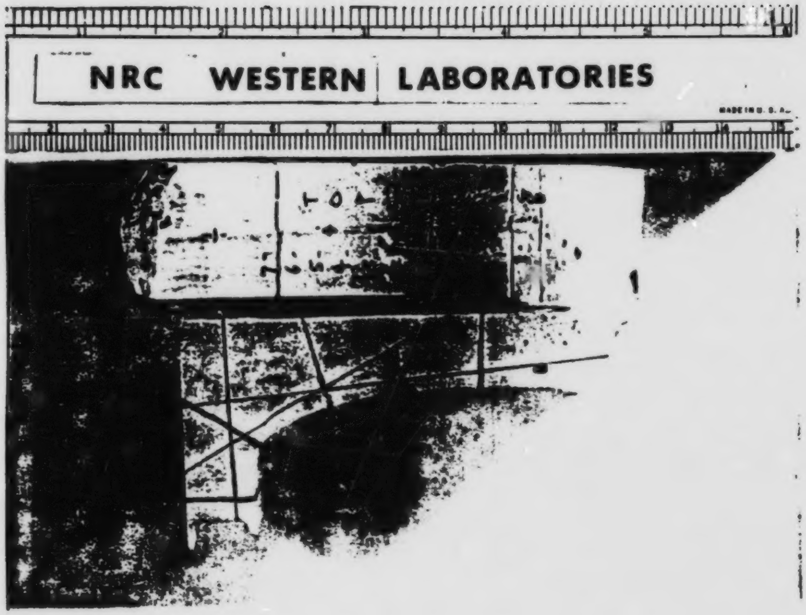

NRC WESTERN LABORATORIES
MADE IN U.S.A.

FIGURE 0-A

FIGURE 0-B

1° CURVE INSIDE RAIL TOP Aug 5, 87.

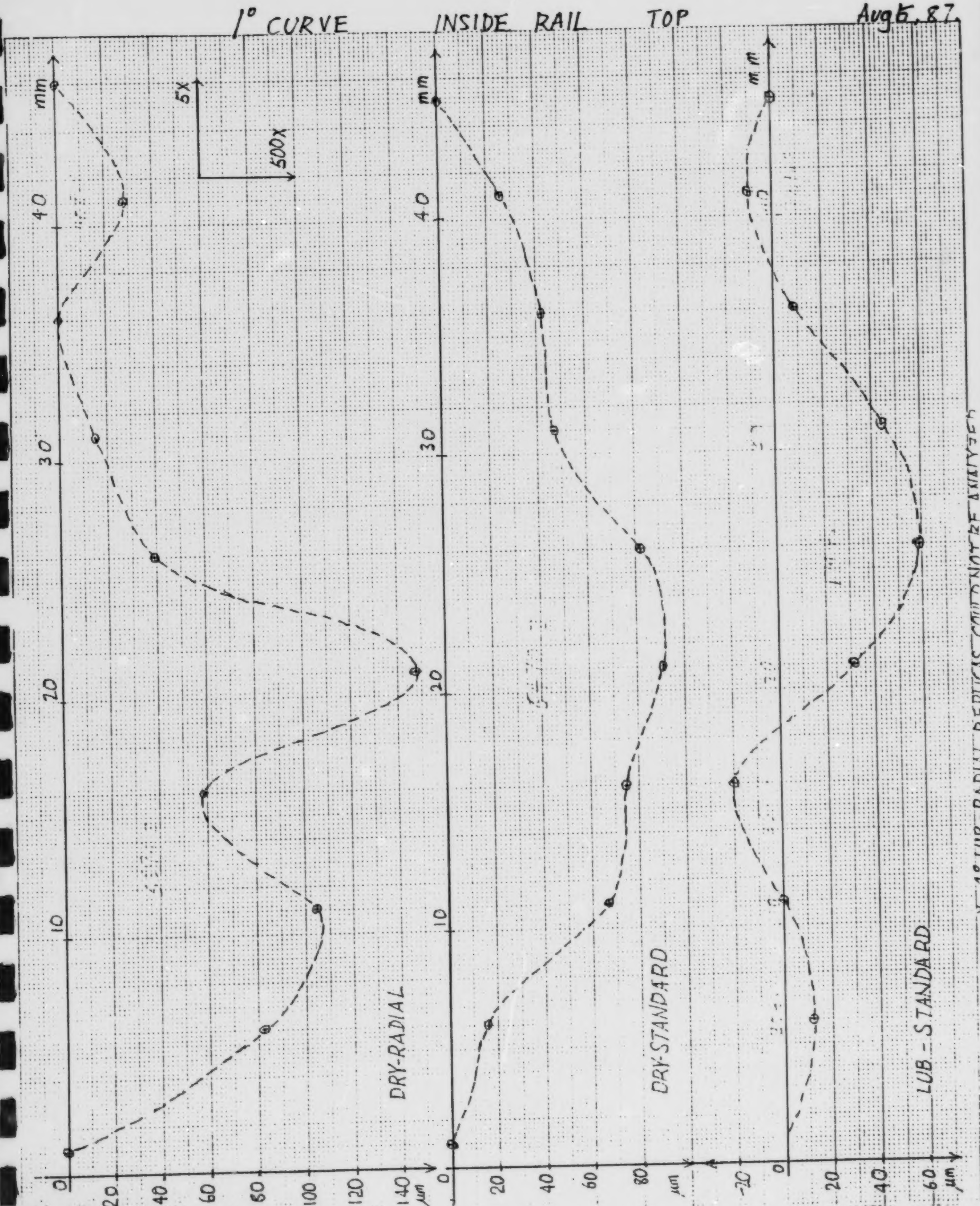


FIGURE 1-A

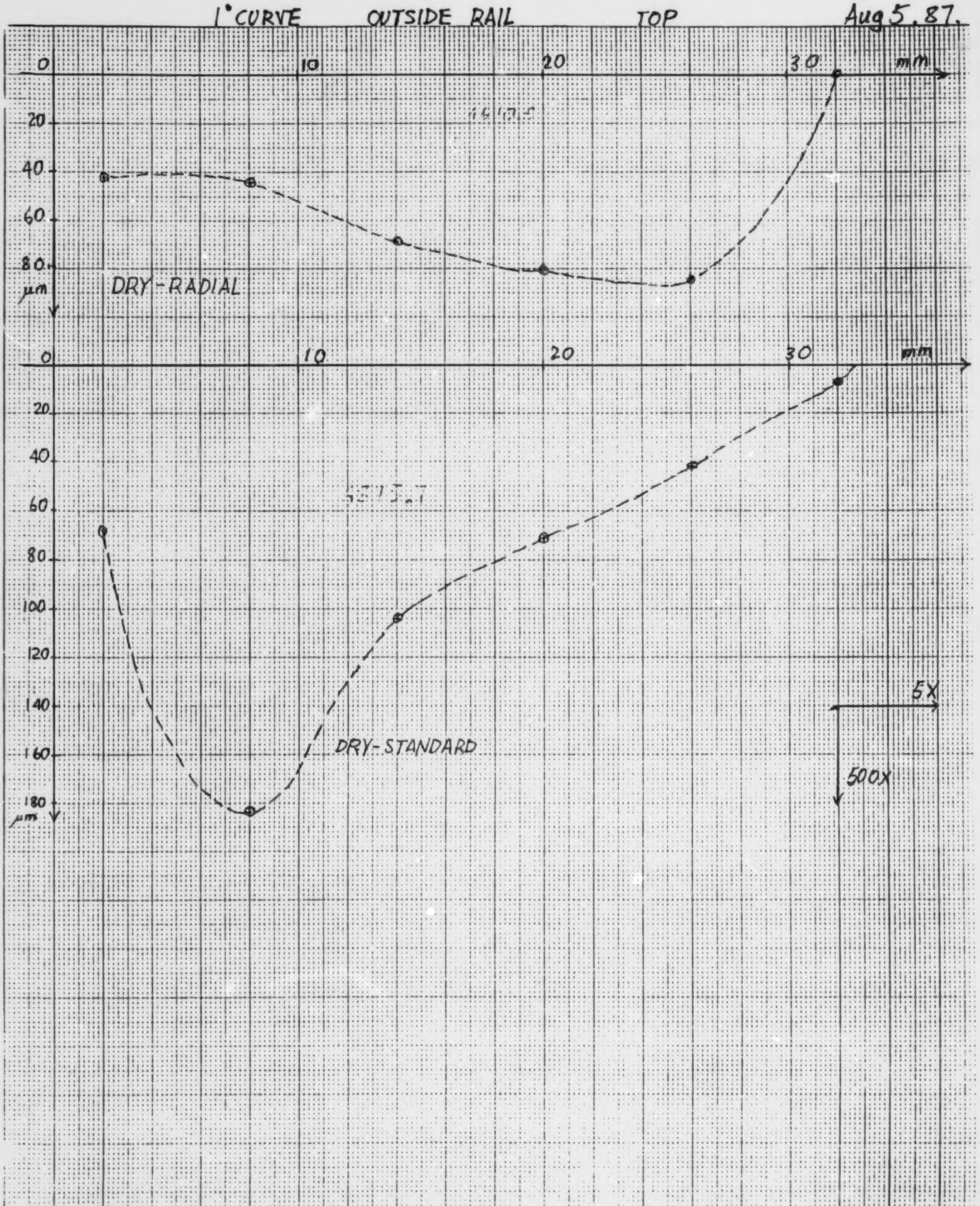

1°CURVE
OUTSIDE RAIL
TOP
Aug 5.87.
0
10
20
30
mm
20
40
60
80
μm
DRY-RADIAL
0
10
20
30
mm
20
40
60
80
100
120
140
160
180
μm
DRY-STANDARD
5X
500X

FIGURE 1-B1

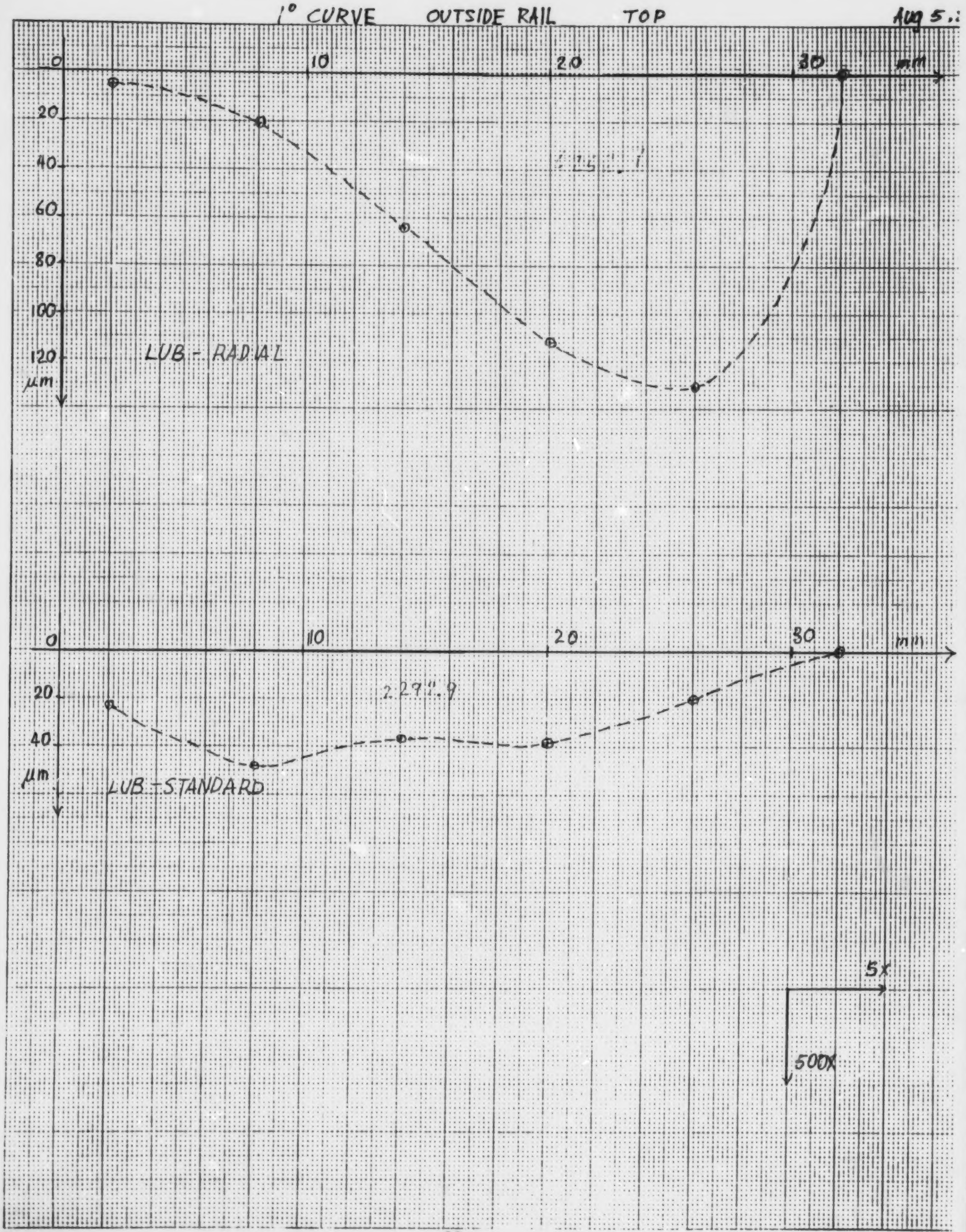

1° CURVE OUTSIDE RAIL TOP
Aug 5.:
0
10
20
30
mm
20
40
60
80
100
120
μm
LUB - RADIAL
0
10
20
30
mm
20
40
μm
2277.9
LUB - STANDARD
5X
500X

FIGURE 1-B2

1°CURVE OUTSIDE RAIL CORNER(12mm) Aug 5, 8

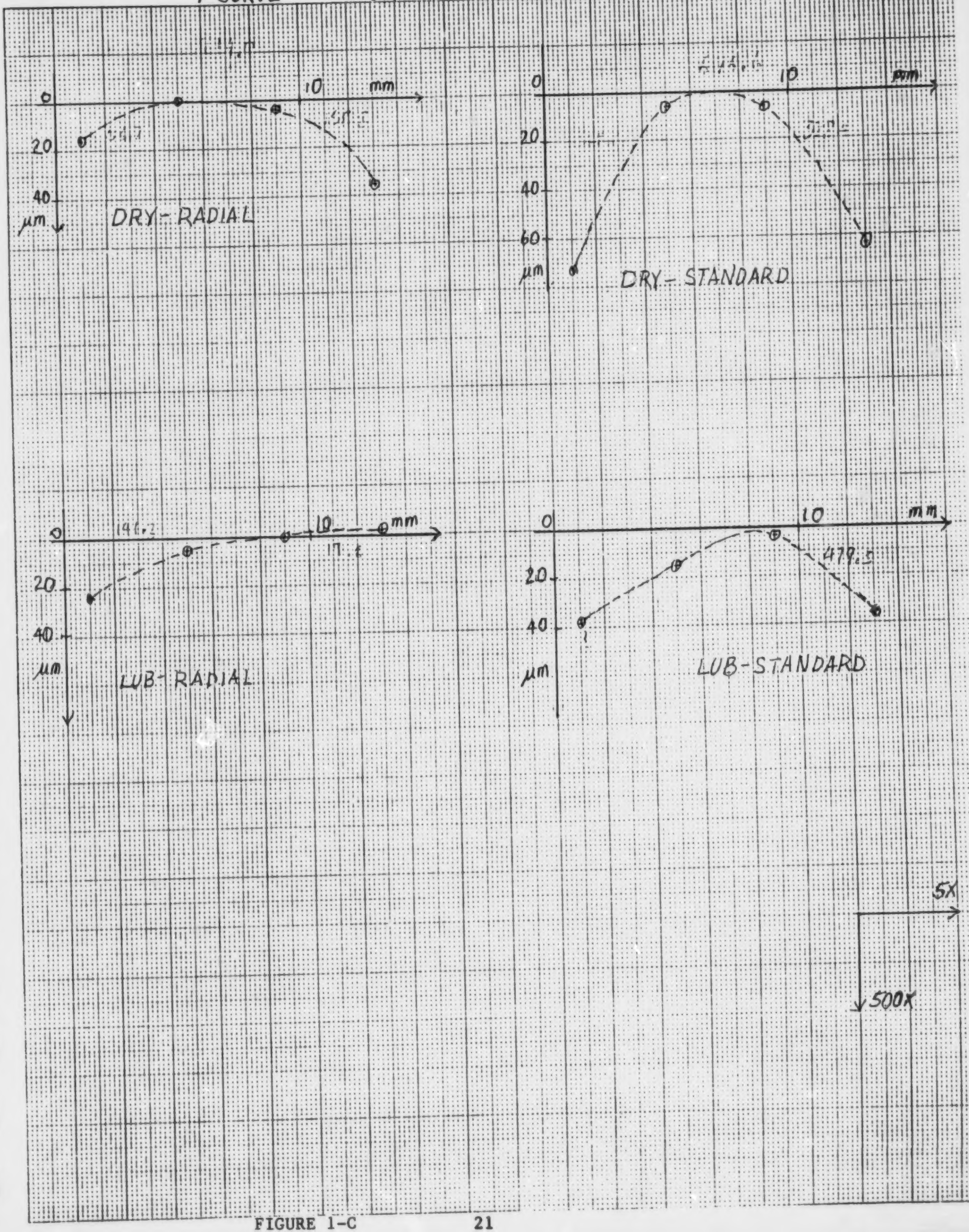


FIGURE 1-C

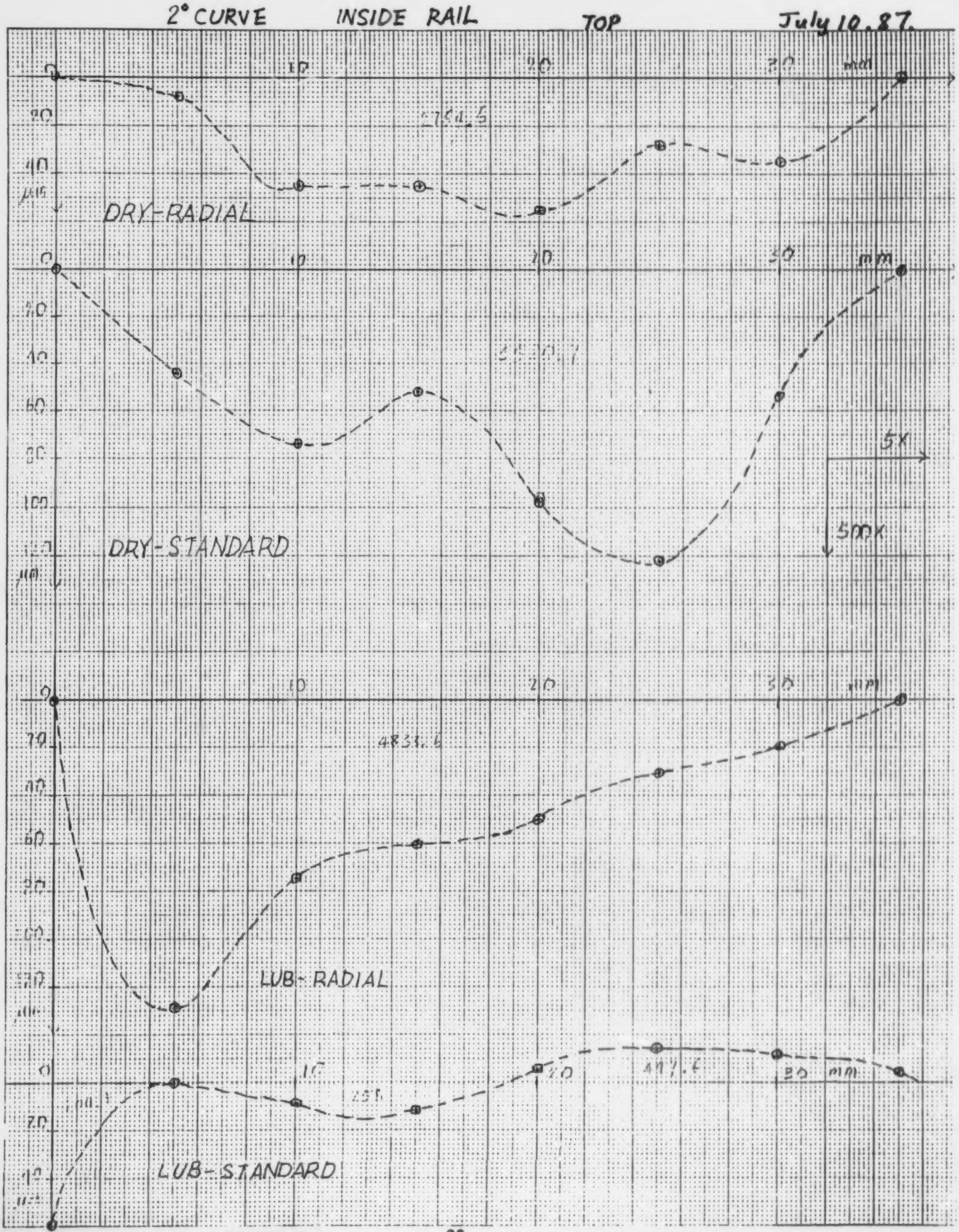

2° CURVE
INSIDE RAIL
TOP
July 10.87.
10
20
30
mm
0
20
40
µm
DRY-RADIAL
0
20
40
60
80
100
120
µm
DRY-STANDARD
5X
500X
4833.6
LUB-RADIAL
417.6
LUB-STANDARD

FIGURE 2-A

2° CURVE OUTSIDE RAIL TOP Aug 5, 87.

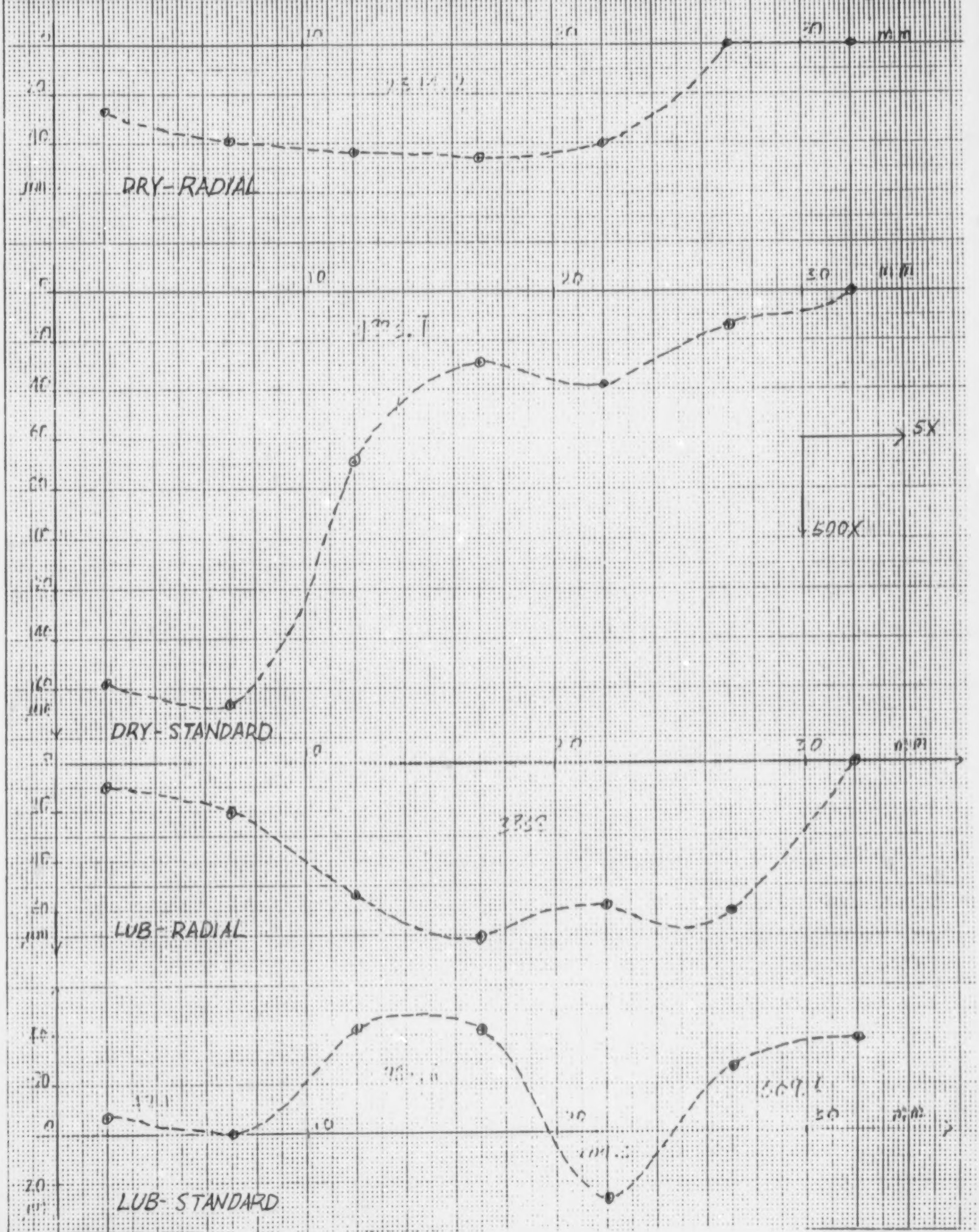


FIGURE 2-B

2° CURVE OUTSIDE CORNER (12mm) Aug 5, 8

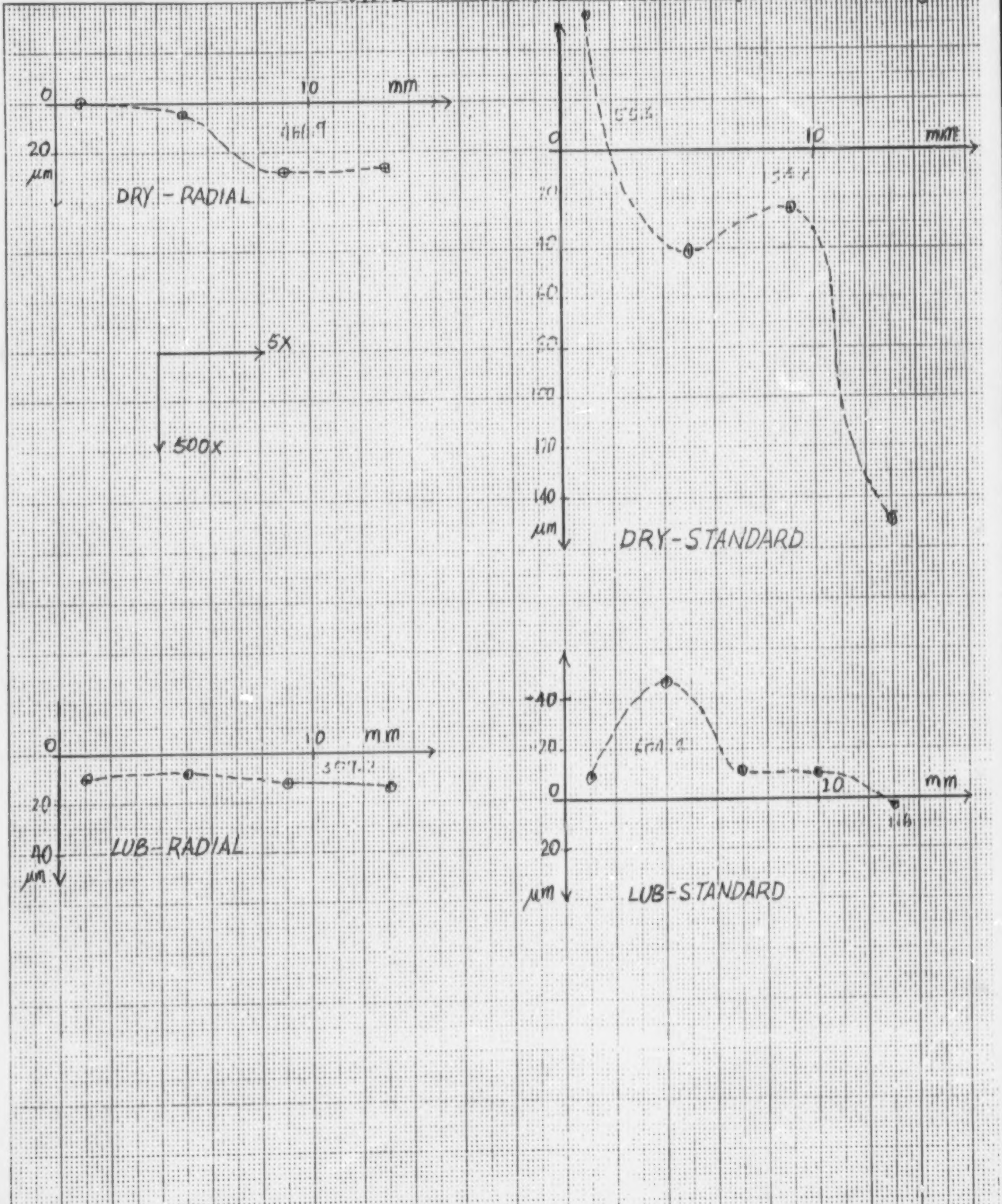


FIGURE 2-C

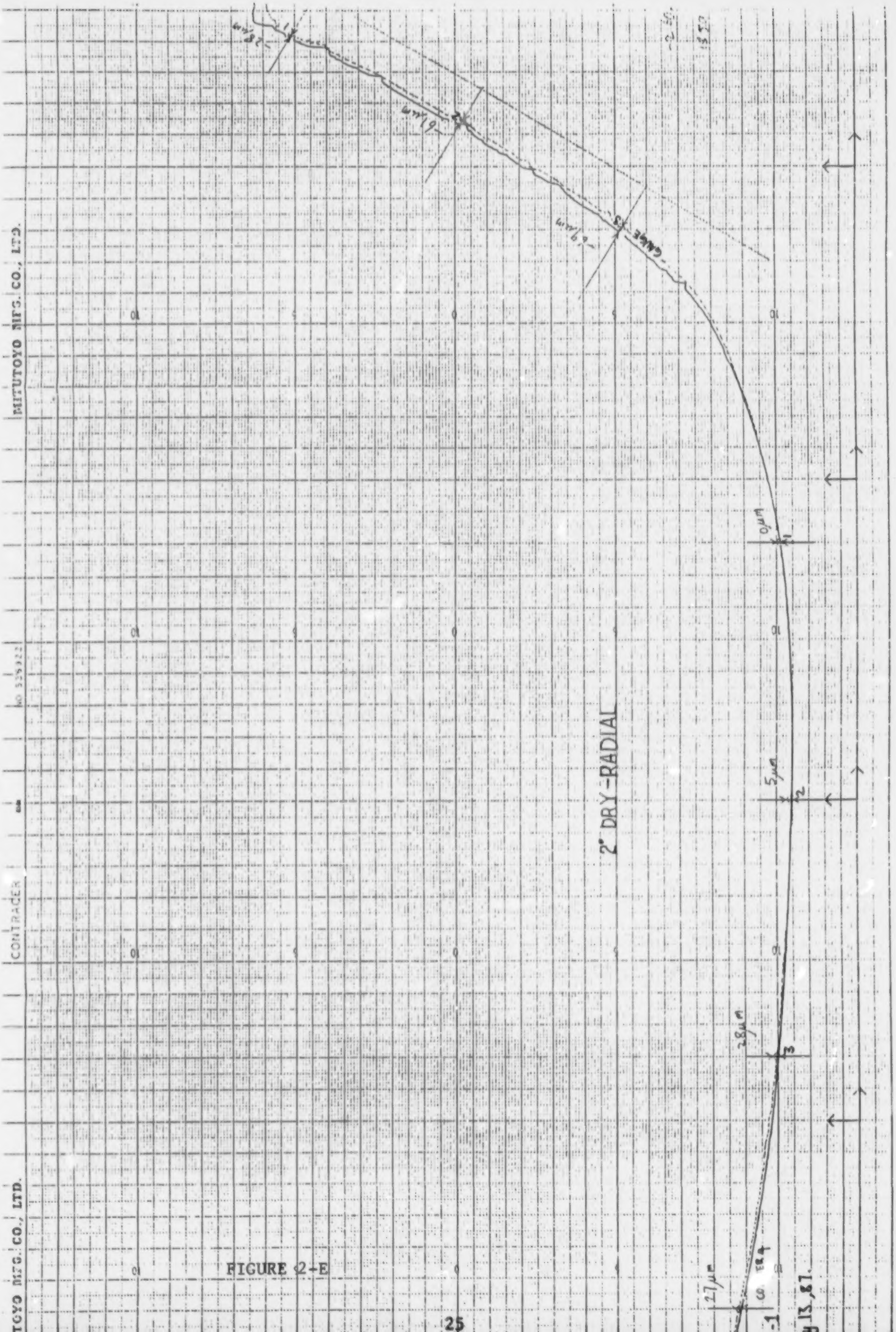
MITUTOYO MFG. CO., LTD.
CONTRACER
NO 535922
2" DRY-RADIAL
-28µm
1
-61µm
2
-69µm
3
GAGE
-2.50
13.50
0µm
1
5µm
2
28µm
3
27µm
CORNER 4
-1
y 13, 87.

FIGURE 2-E

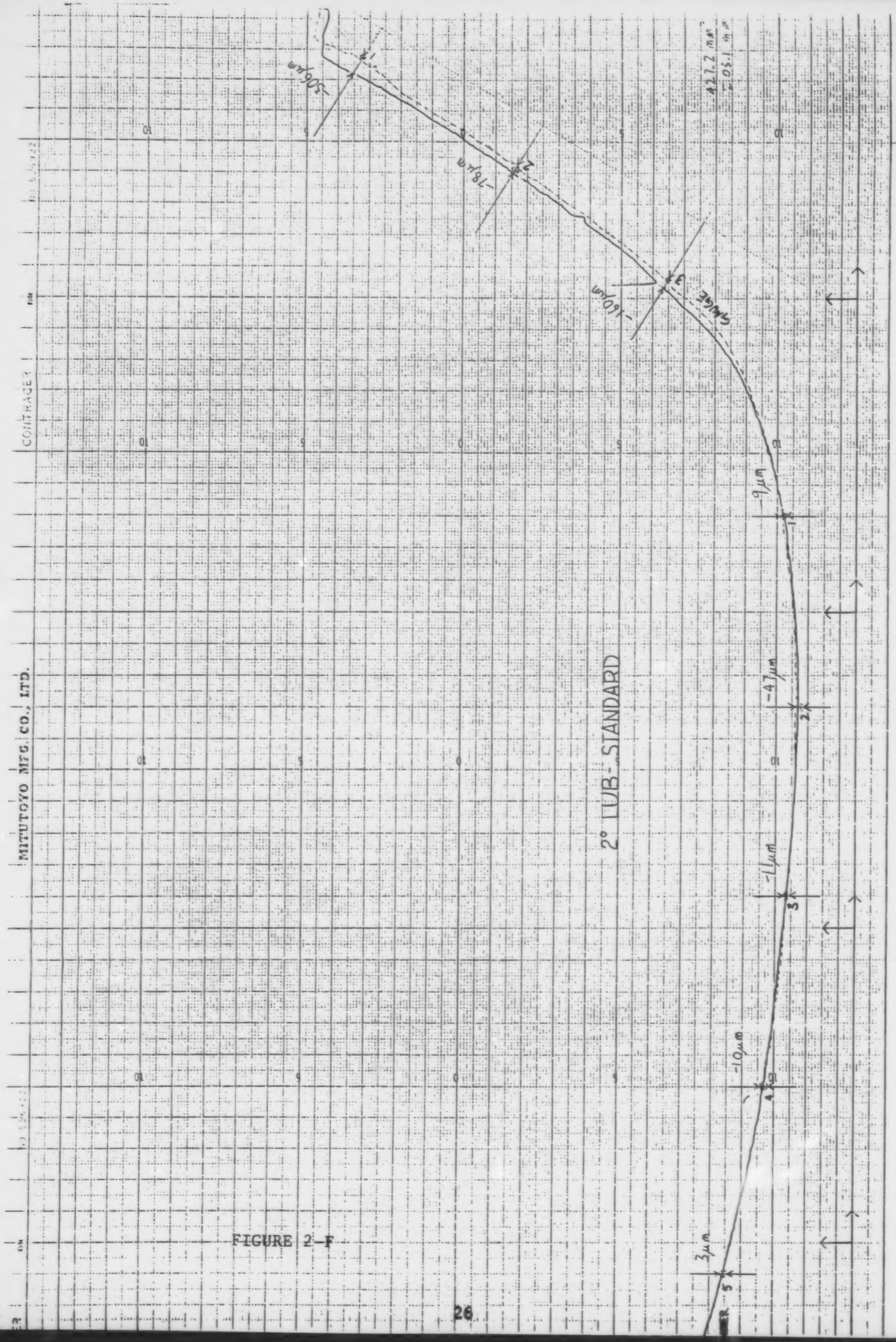

MITUTOYO MFG. CO., LTD.
CONTRACER
2° LUB - STANDARD
GAUGE
-306µm
1
-78µm
2
-160µm
3
-9µm
1
-47µm
2
-11µm
3
-10µm
4
3µm
5
427.2 mm
±05.1 in
10
5
0

FIGURE 2-F

3° CURVE INSIDE RAIL TOP July 8, 87.

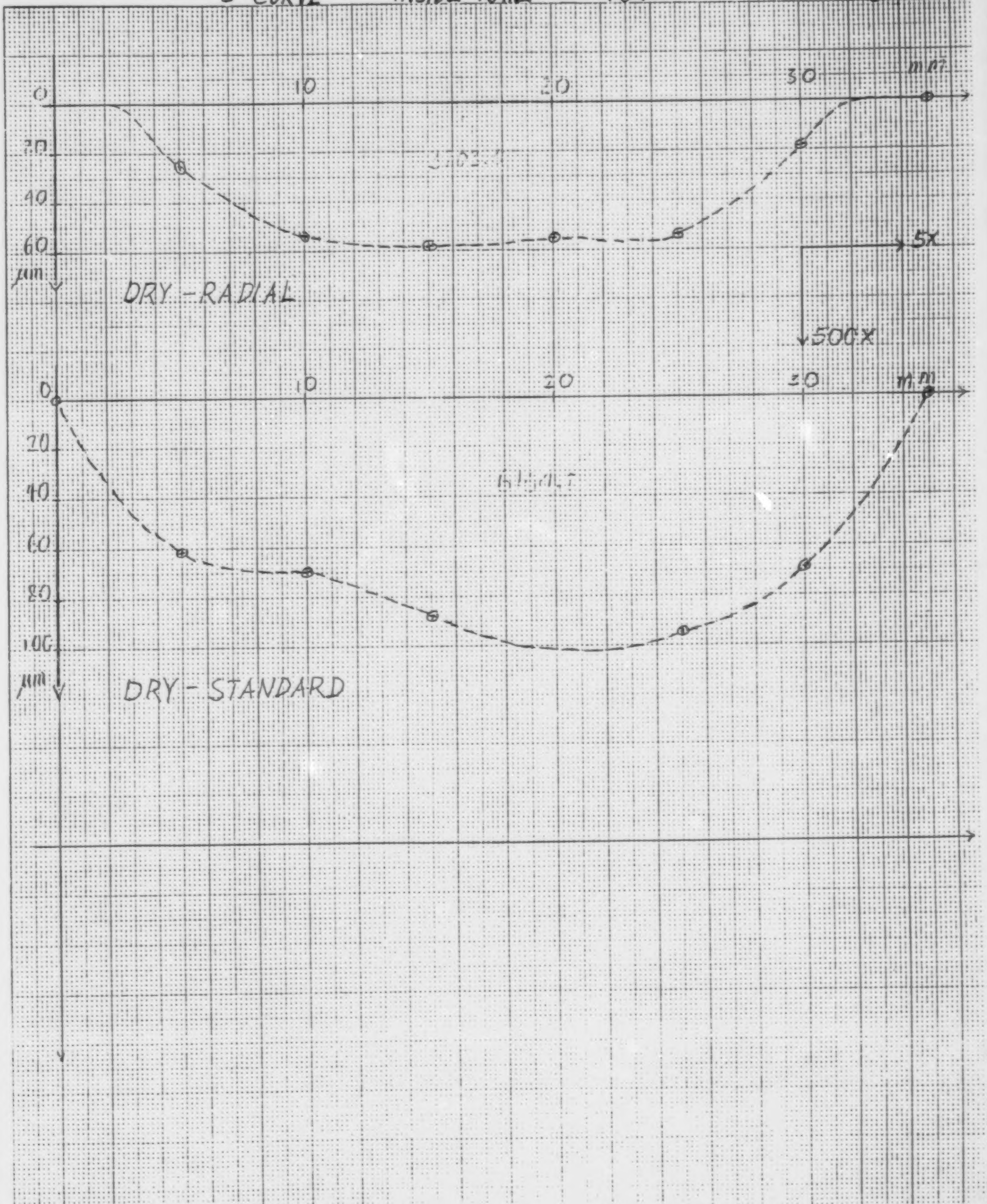


FIGURE 3-A1

3° CURVE INSIDE RAIL TOP July 8.87.

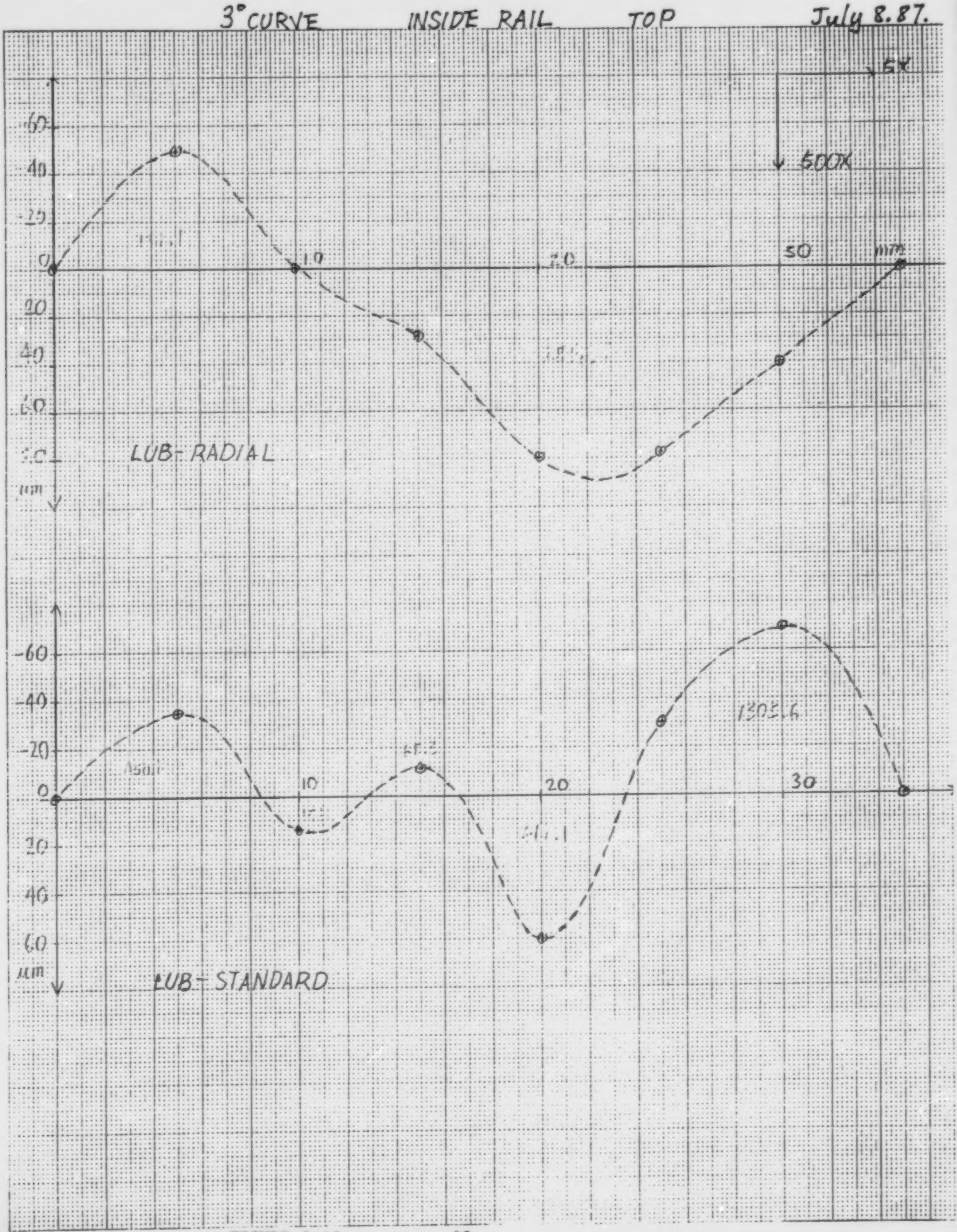


FIGURE 3-A2

3° CURVE OUTSIDE RAIL TOP July 8, 87.

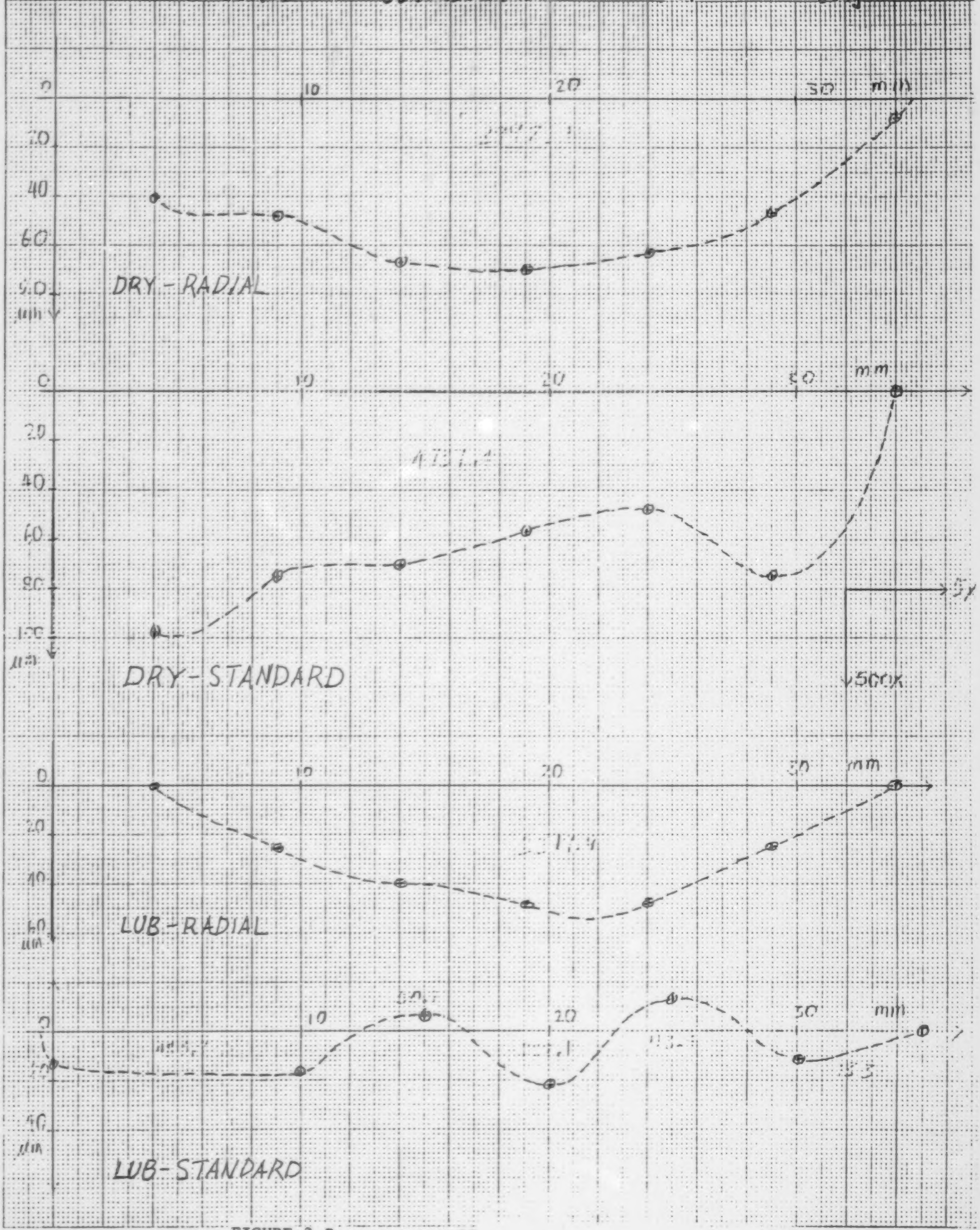


FIGURE 3-B

3° CURVE OUTSIDE RAIL GAUGE CORNER (12mm) July 8, 87.

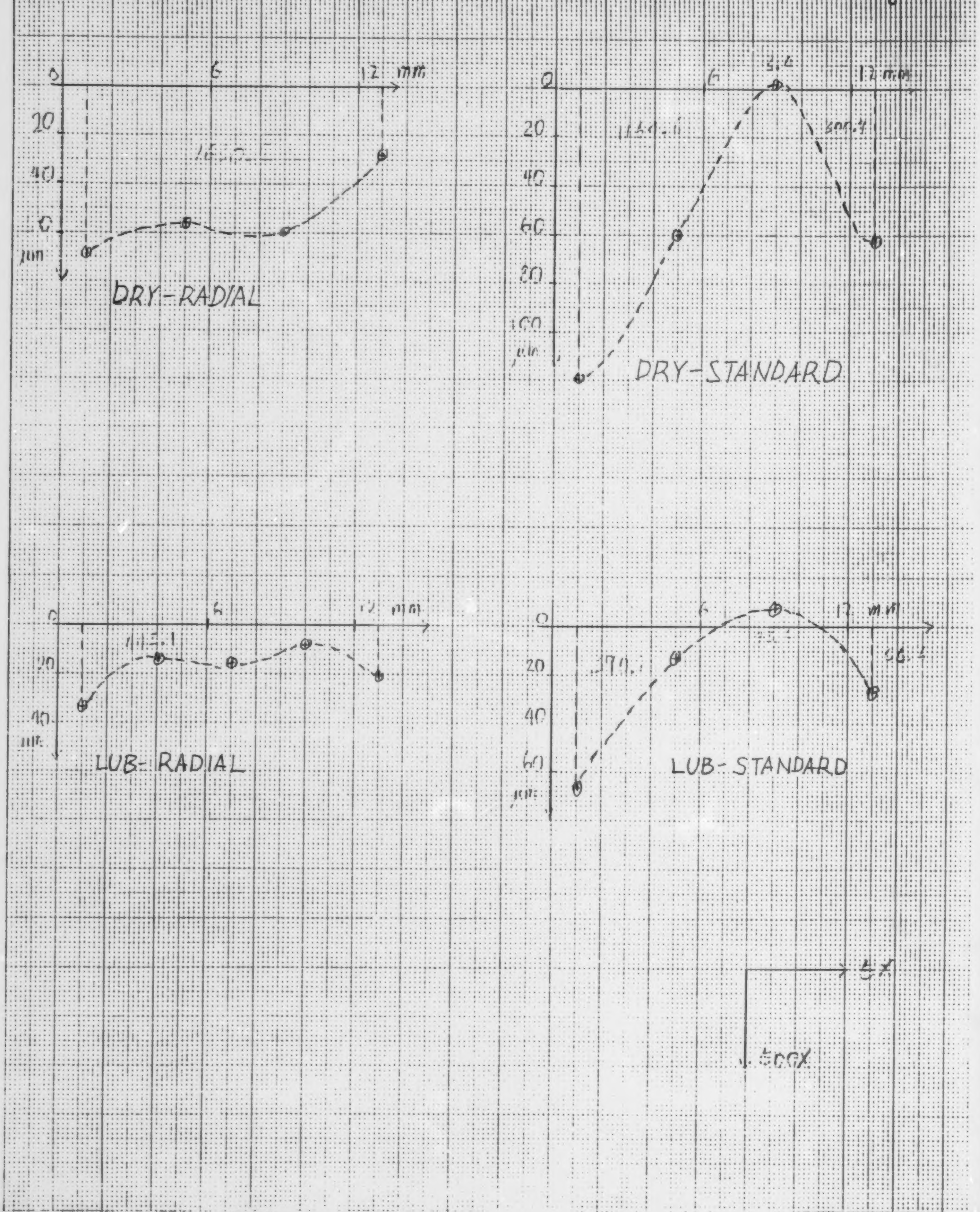


FIGURE 3-C

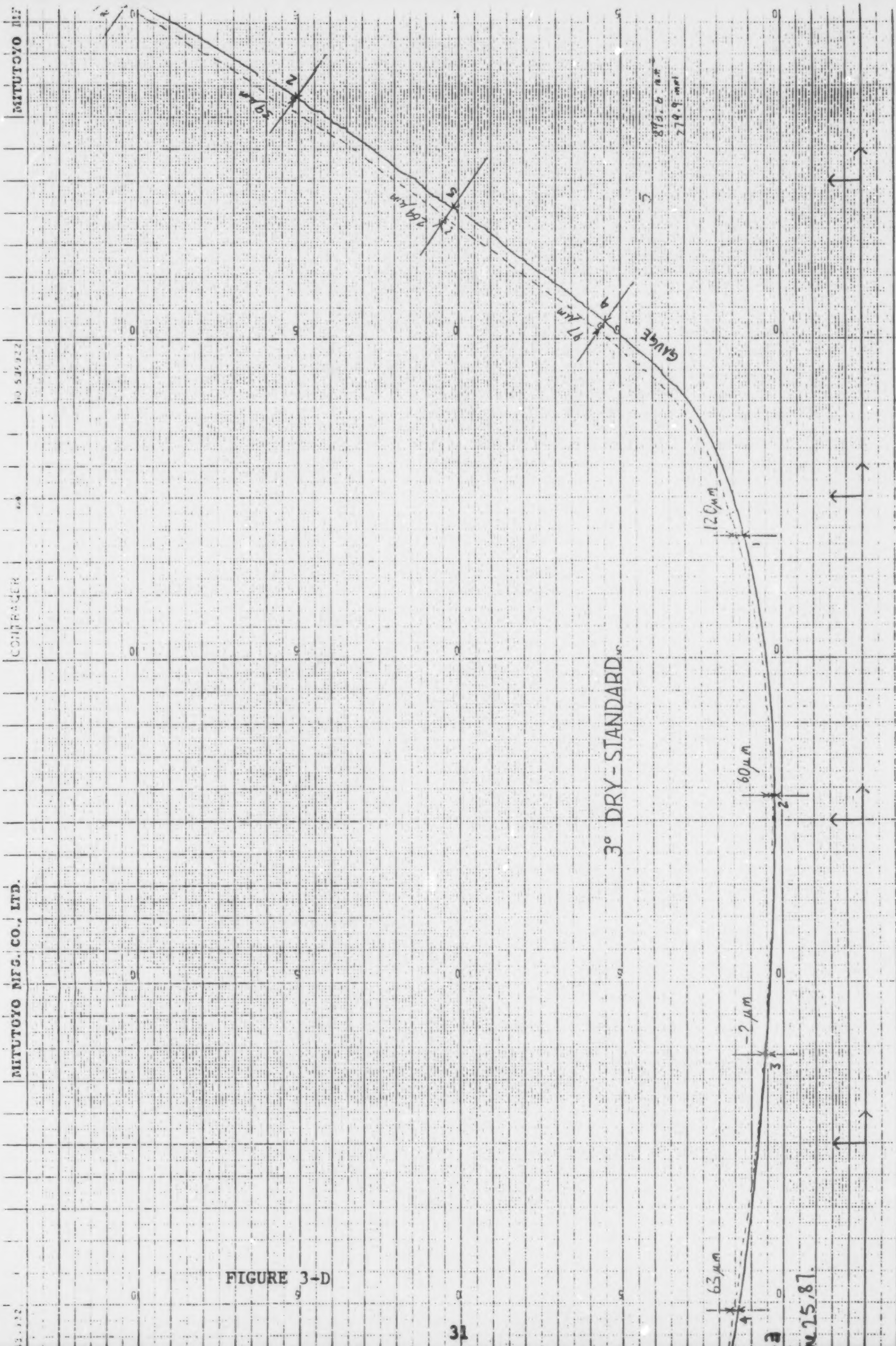

MITUTOYO MFG. CO., LTD.
CONTRACER
3° DRY-STANDARD
GAUGE
2
3
4
59μm
204μm
97μm
120μm
1
60μm
2
-2μm
3
63μm
4
879.6 mm
279.9 mm
25.87.

FIGURE 3-D

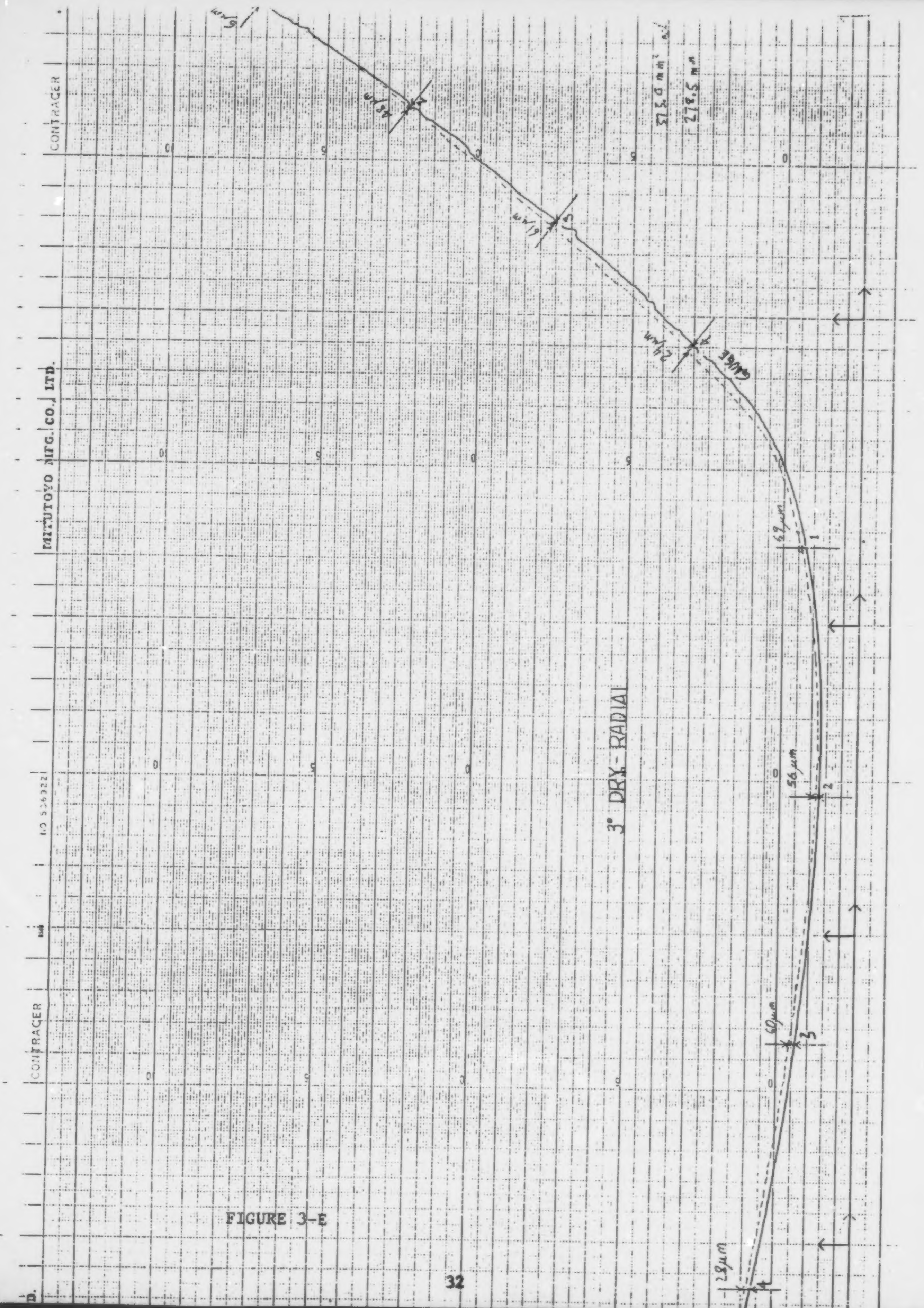

MITUTOYO MFG. CO., LTD.
CONTRACER
CONTRACER
3° DRY-RADIAL
513.0 mm²
278.5 mm
GAUGE
16μm
45μm
61μm
24μm
69μm
56μm
60μm
28μm
1
2
3
4
5

FIGURE 3-E

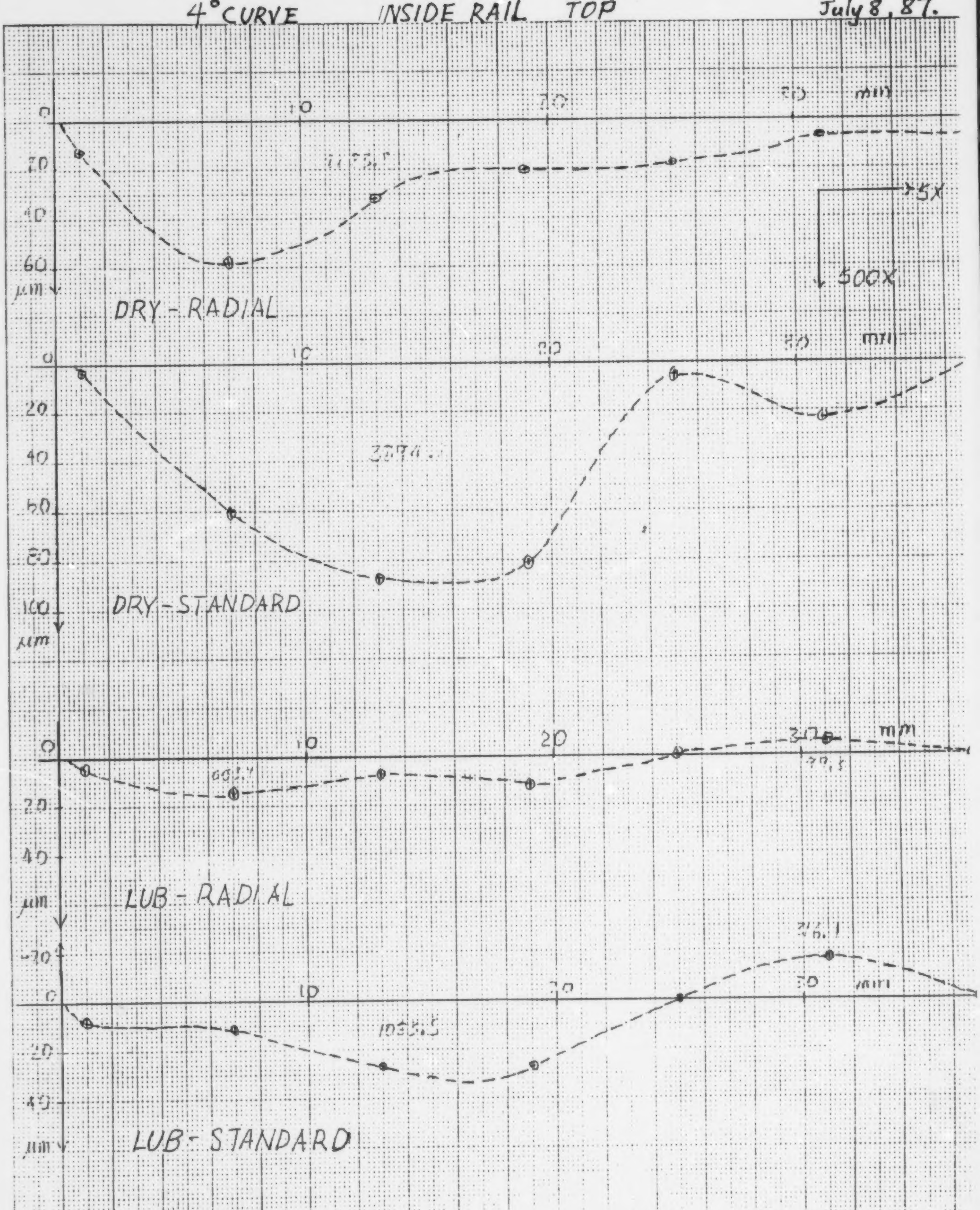

4°CURVE INSIDE RAIL TOP
July 8, 87.
0
10
20
30
mm
20
40
60
μm
5X
500X
DRY - RADIAL
0
10
20
30
mm
20
40
60
80
100
μm
DRY - STANDARD
0
10
20
30
mm
20
40
μm
LUB - RADIAL
-20
0
10
20
30
mm
20
40
μm
LUB - STANDARD

FIGURE 4-A

4° CURVE OUTSIDE RAIL TOP July 8, 87.

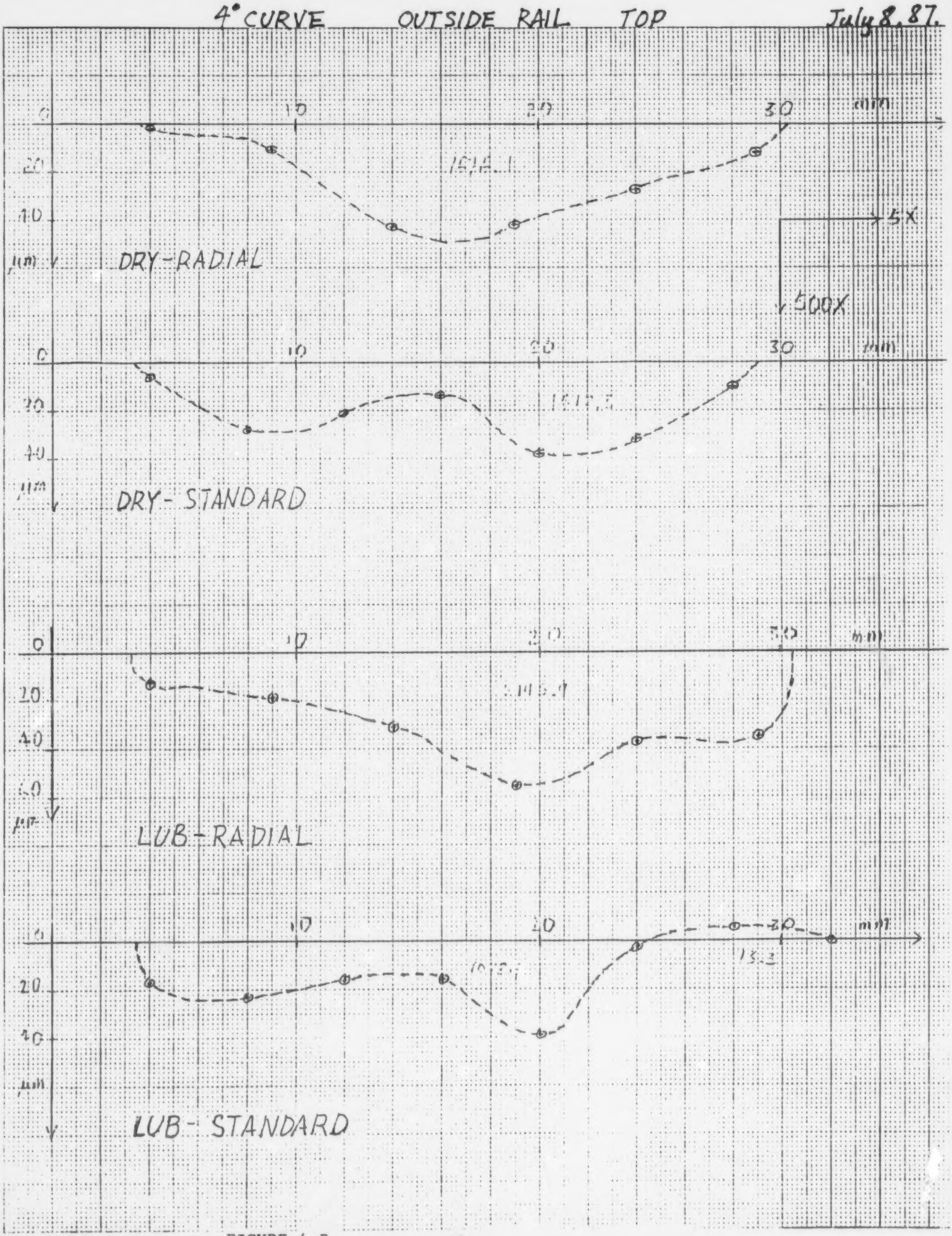


FIGURE 4-B

4°CURVE OUTSIDE RAIL GAUGE CORNER (9mm) July 8, 8

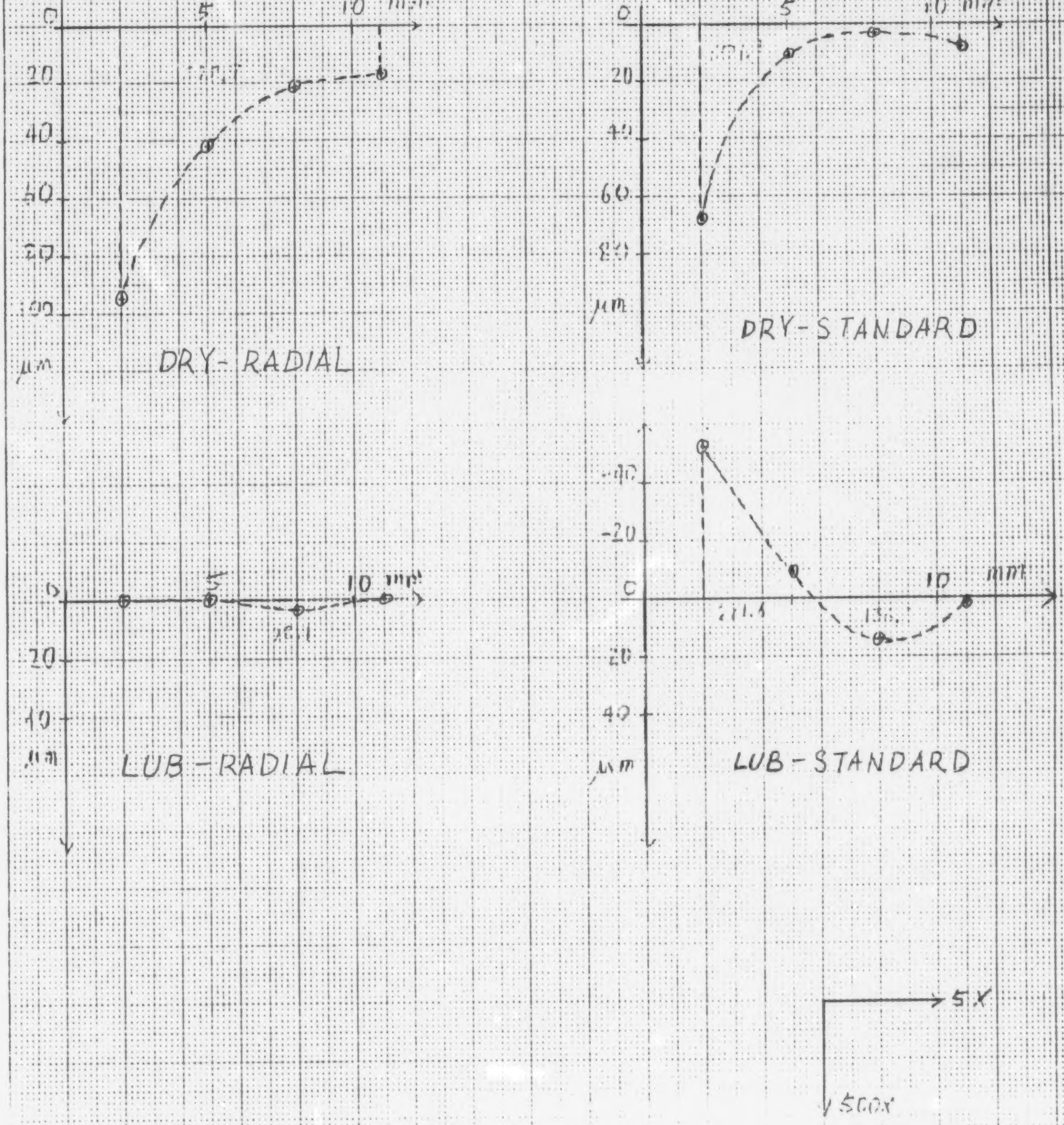


FIGURE 4-C

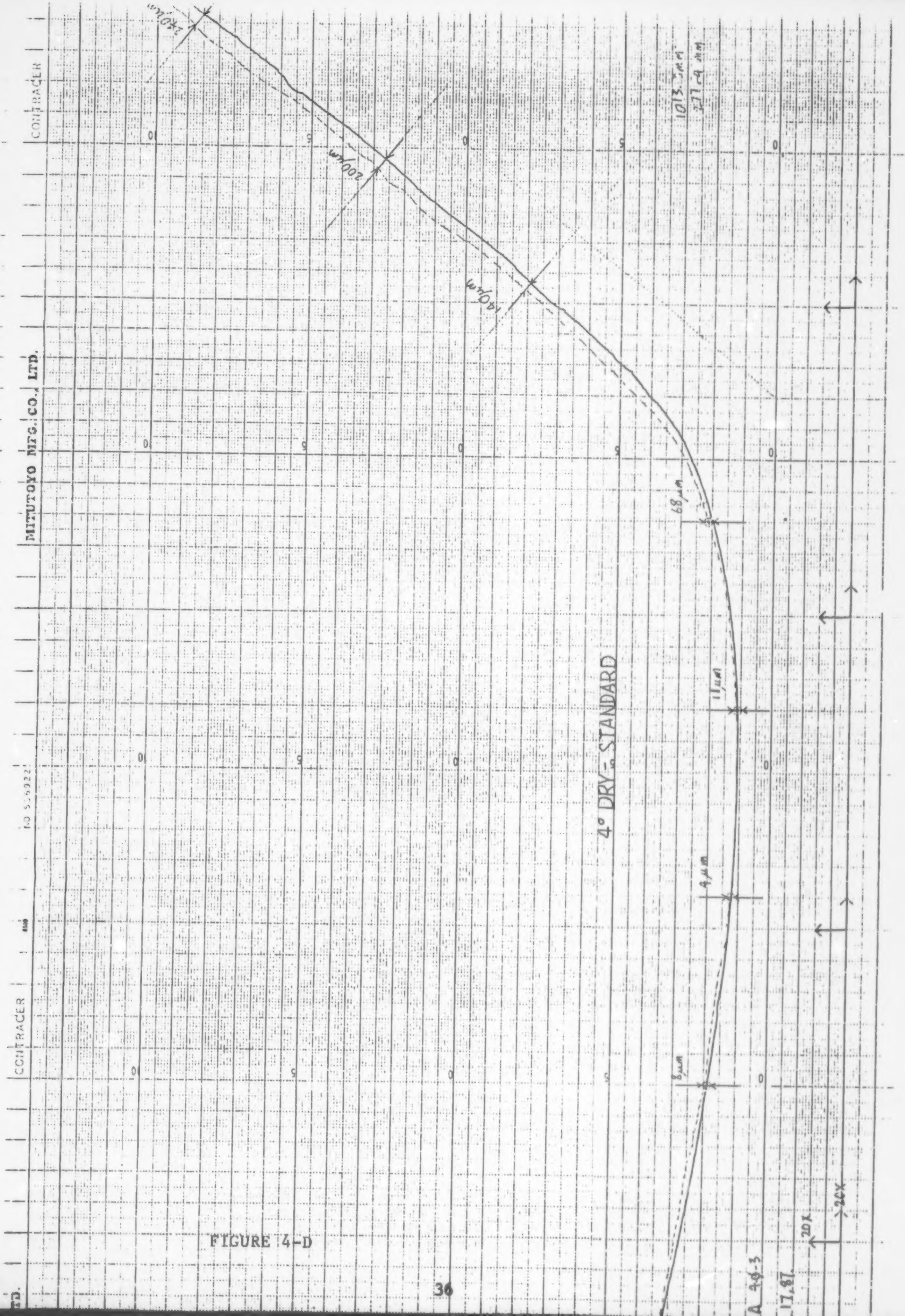

240µm
200µm
140µm
68µm
11µm
4µm
8µm
4° DRY - STANDARD
MITUTOYO MFG. CO., LTD.
CONTRACER
CONTRACER
1013.3mm
x77.4 mm
A 4Φ-3
17.87
20X
>20X

FIGURE 4-D

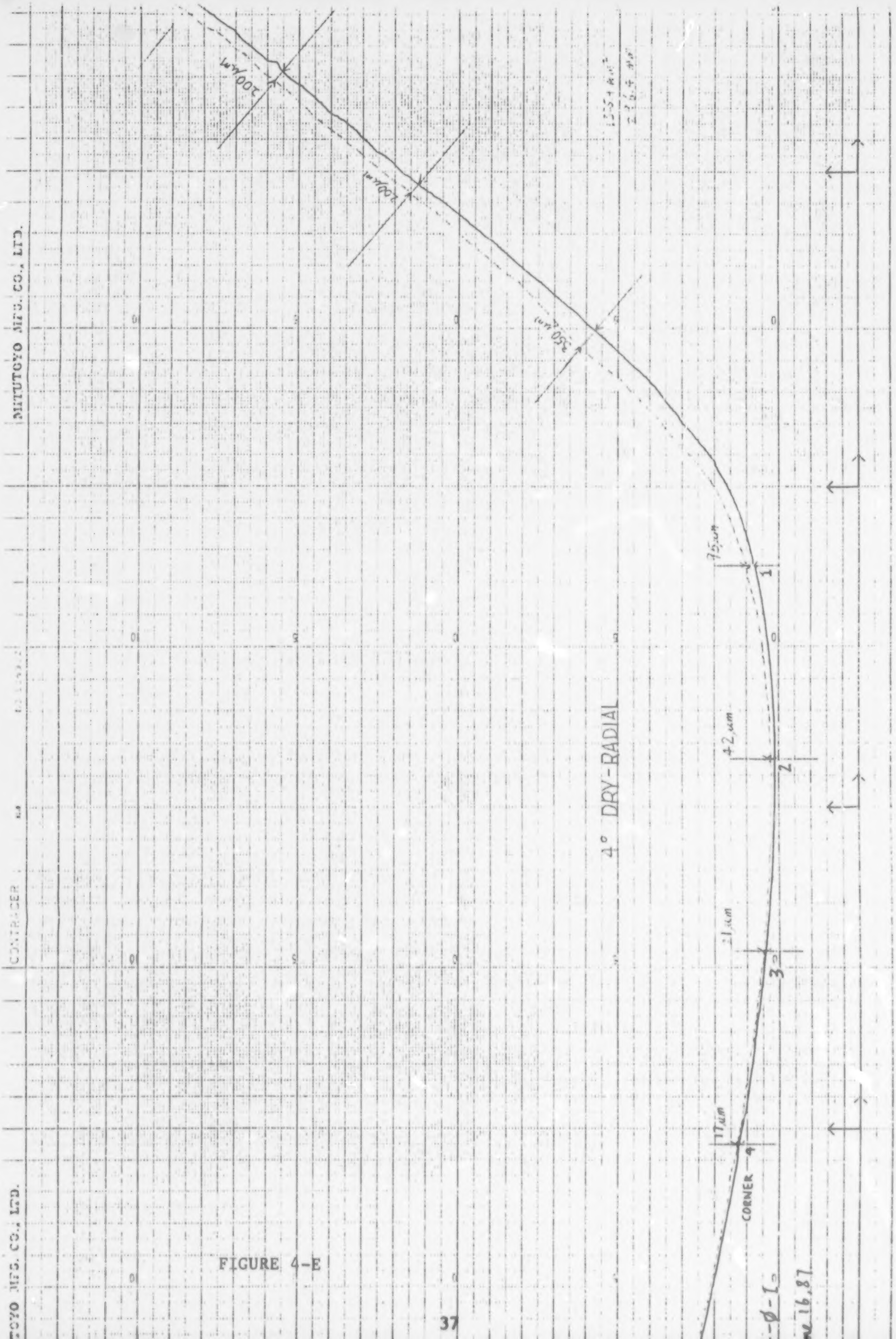

MITUTOYO MFG. CO., LTD.
CONTRACER
4° DRY-RADIAL
200 µm
200 µm
250 µm
75 µm
42 µm
21 µm
17 µm
1
2
3
4
CORNER
-0-1

FIGURE 4-E

5° CURVE INSIDE RAIL TOP July 7, 87.

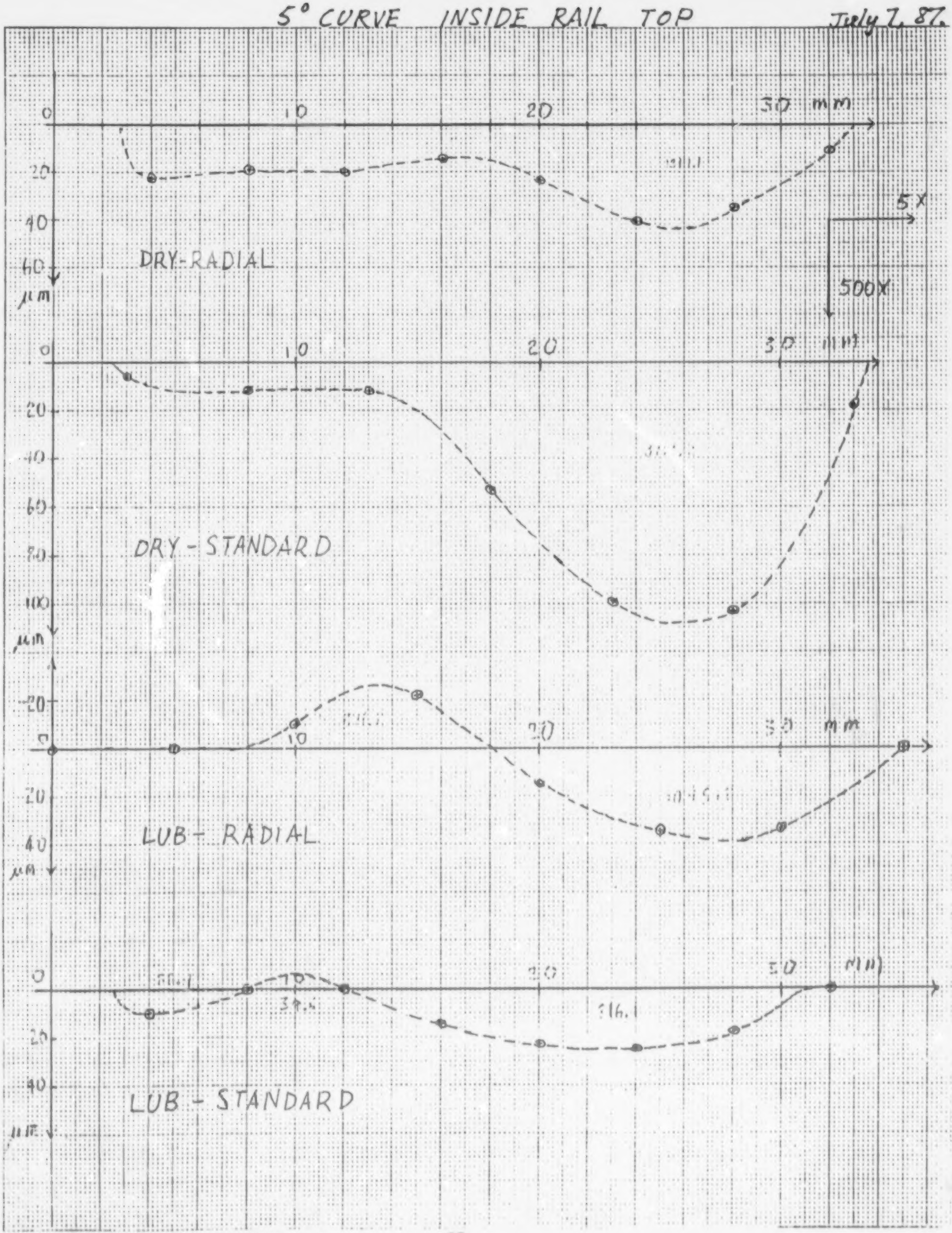


FIGURE 5-A

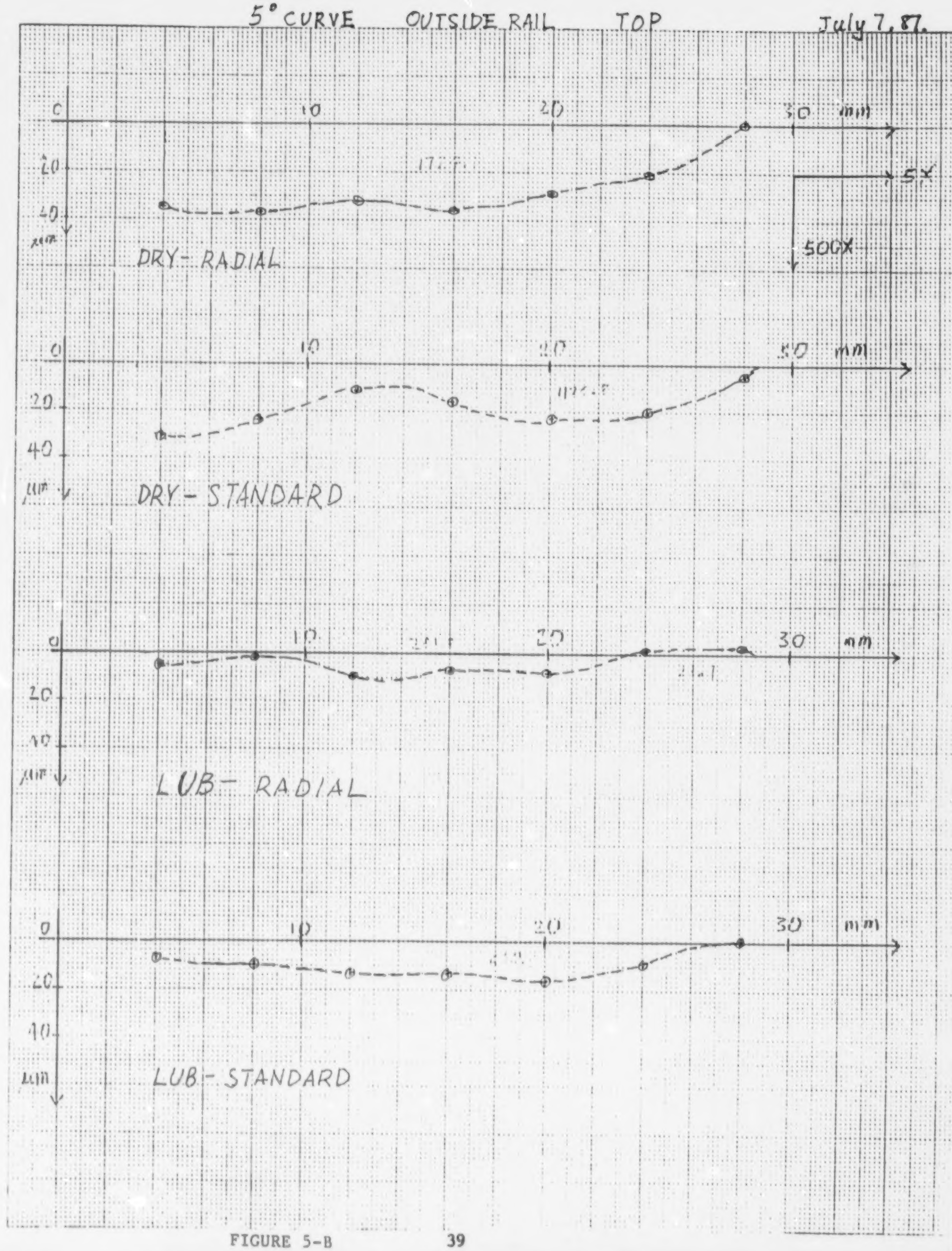

5° CURVE OUTSIDE RAIL TOP
July 7, 87.
0
10
20
30
mm
20
40
μm
5X
500X
DRY- RADIAL
0
10
20
30
mm
20
40
μm
DRY - STANDARD
0
10
20
30
mm
20
40
μm
LUB - RADIAL
0
10
20
30
mm
20
40
μm
LUB - STANDARD

FIGURE 5-B

5° CURVE OUTSIDE RAIL GAUGE CORNER (12mm) July 7, 87.

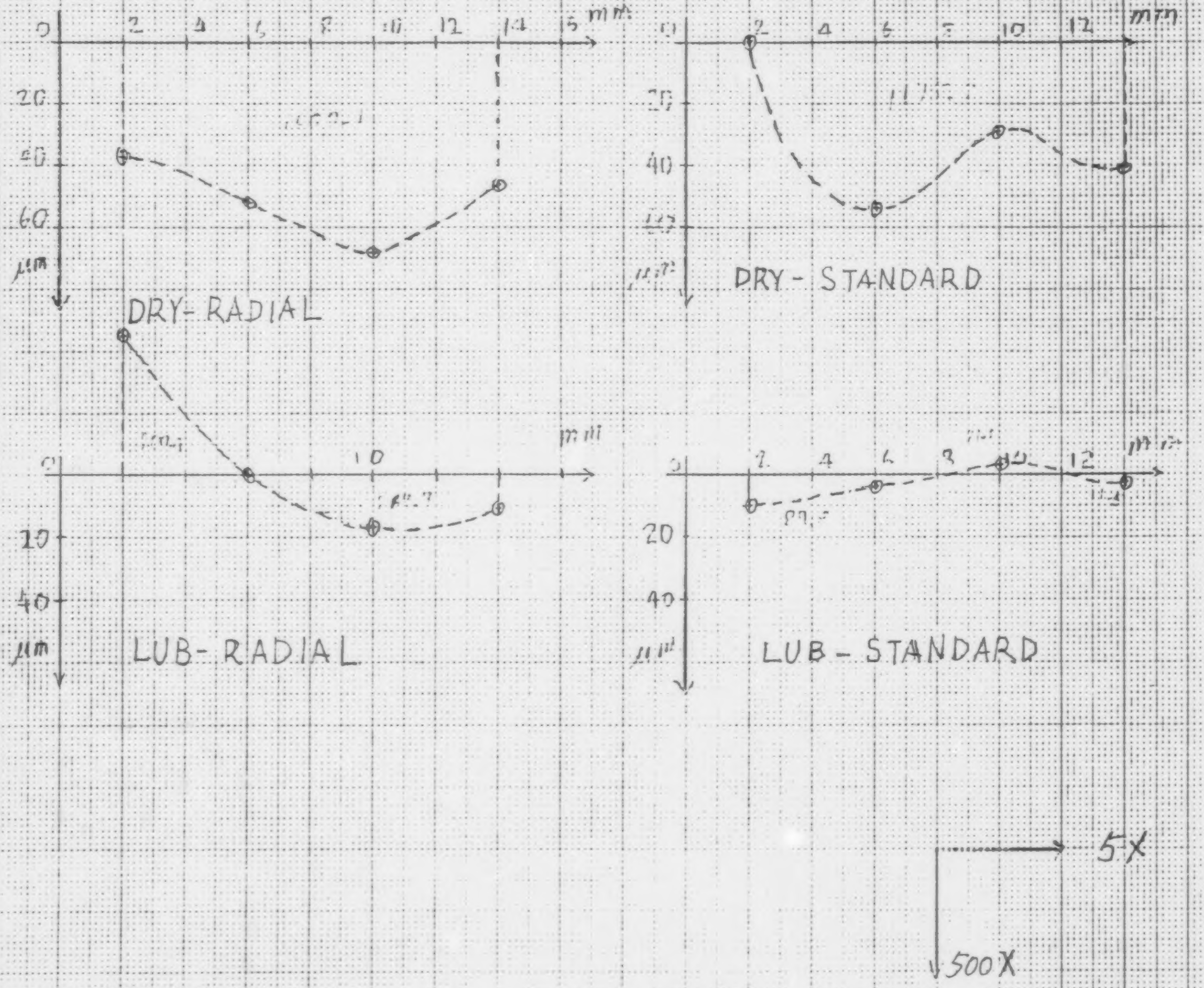


FIGURE 5-C

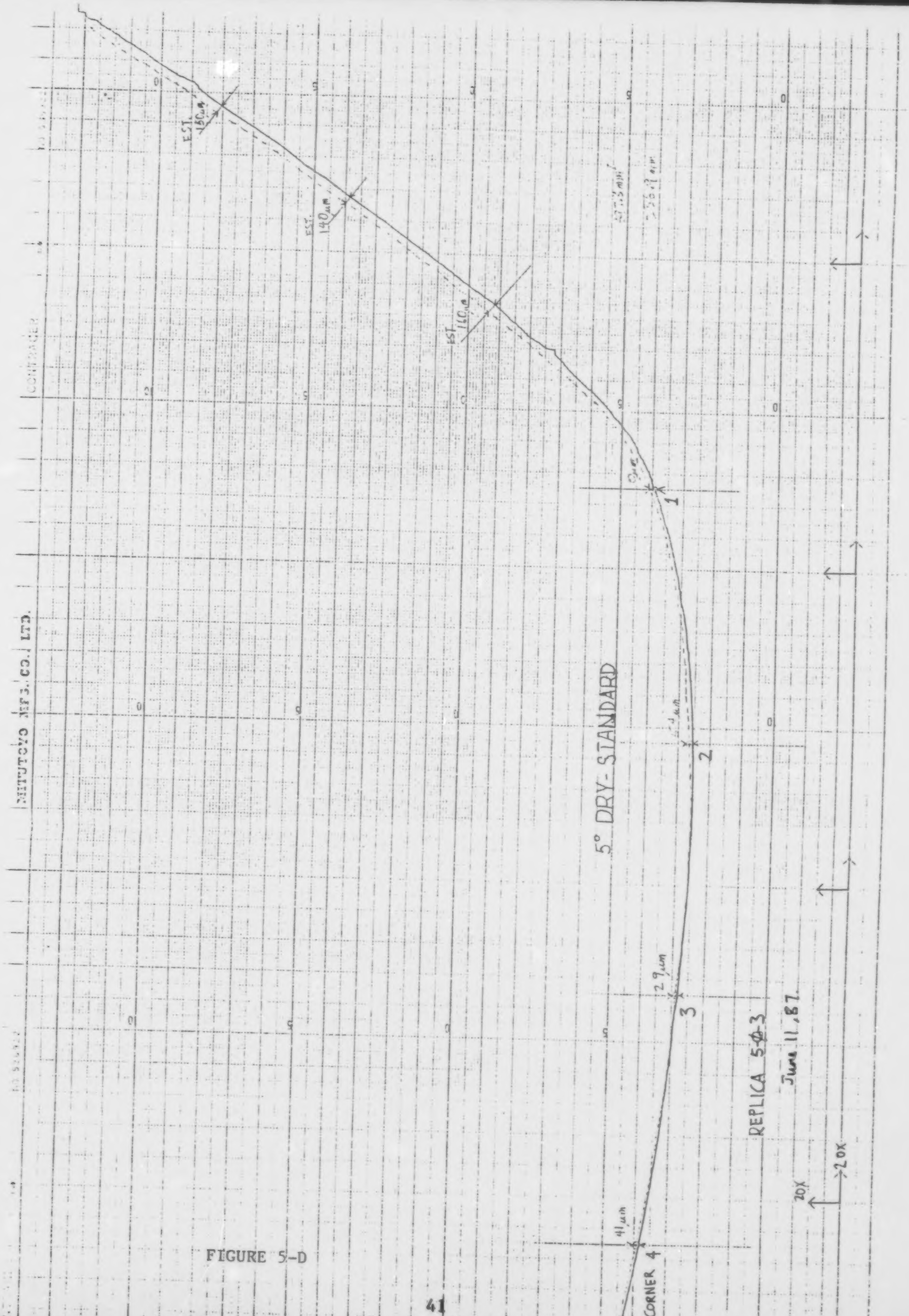

MITUTOYO MFG. CO., LTD.
CONTRACER
5° DRY-STANDARD
REPLICA 5-3
June 11, 87
EST. 180µm
EST. 140µm
EST. 160µm
0µm
1
2
3
4
CORNER
29µm
41µm
20X
20X

FIGURE 5-D

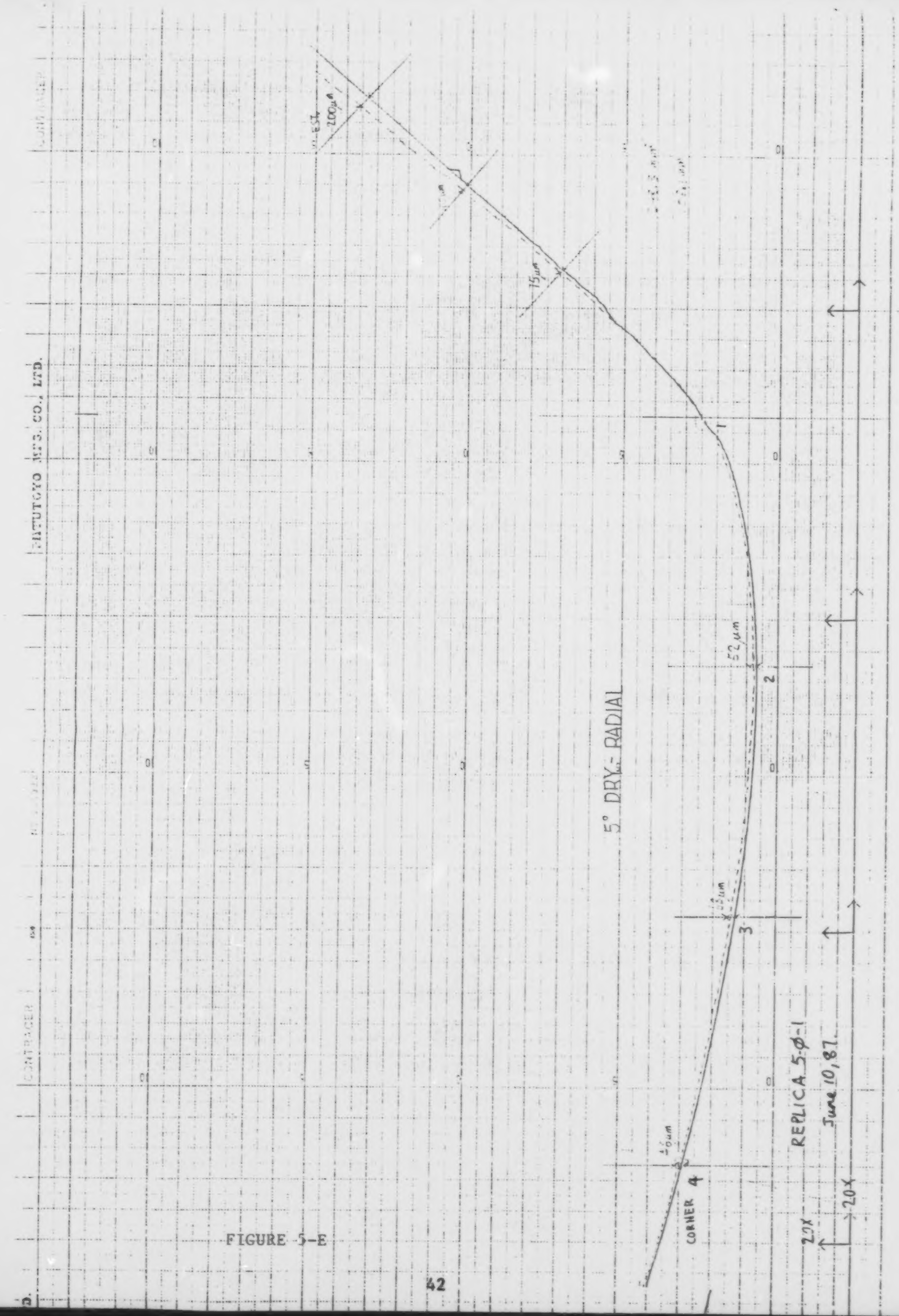

MITUTOYO MFG. CO., LTD.
CONTRACER
5° DRY - RADIAL
REPLICA 5-Ø-1
June 10, 87
200µm EST.
15µm
52µm
1
2
3
4
CORNER
20X
20X

FIGURE 5-E

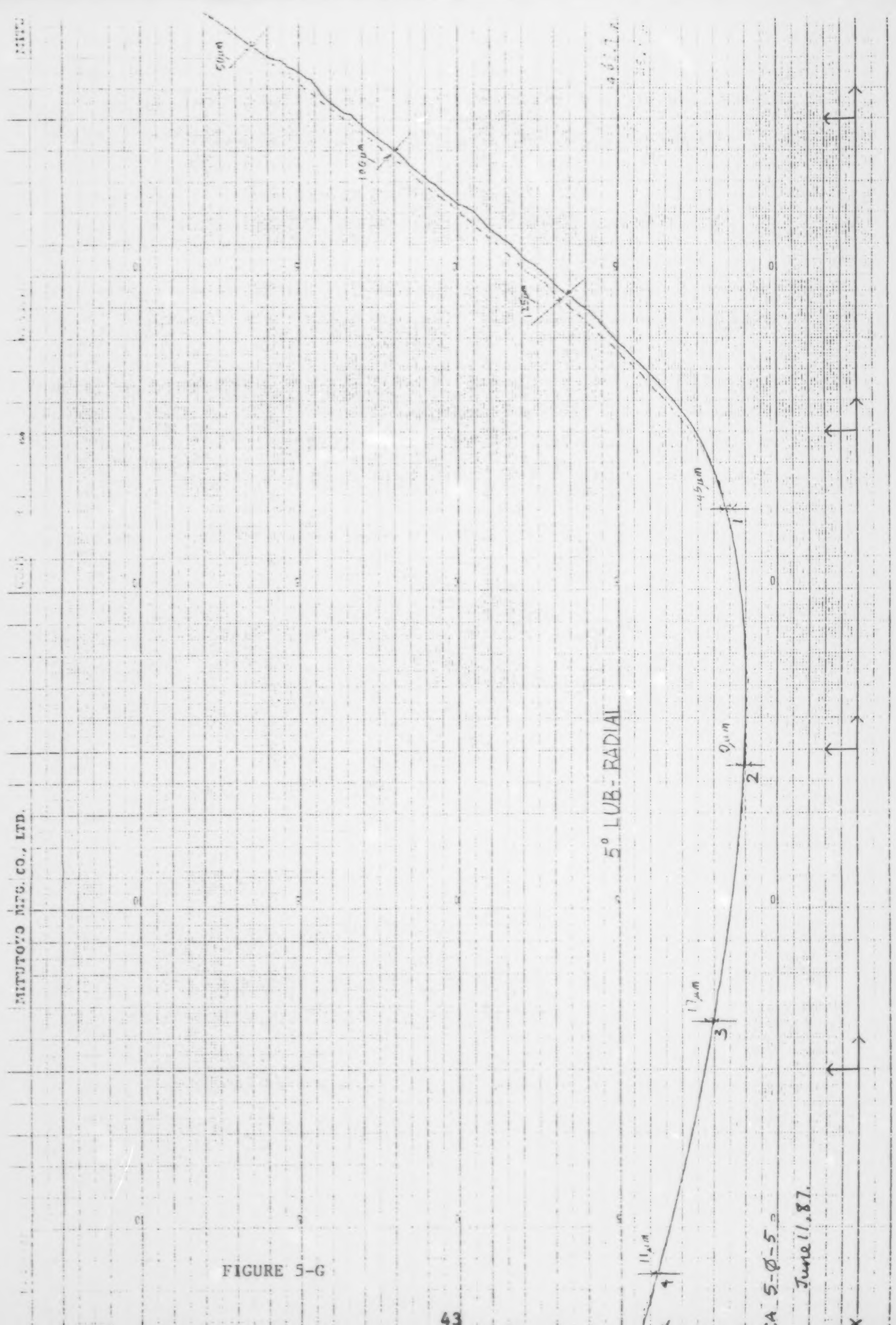

MITUTOYO MFG. CO., LTD.
5° LUB-RADIAL
50µm
100µm
125µm
45µm
1
9µm
2
17µm
3
11µm
4
CA 5-Ø-5
June 11, 87.

FIGURE 5-G

6° CURVE INSIDE RAIL TOP June 22, 87.

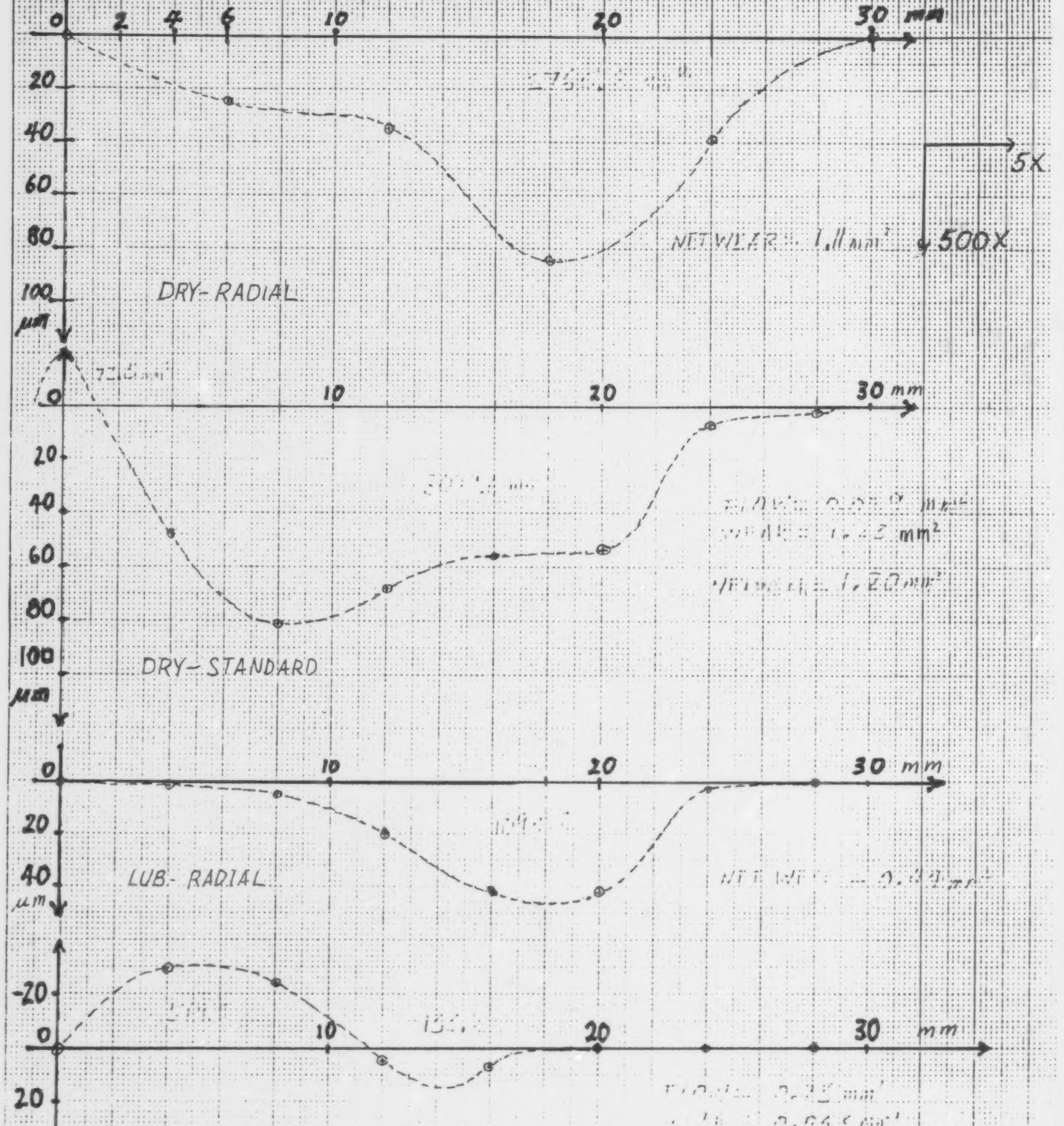


FIGURE 6-A

6° CURVE OUTSIDE RAIL TOP

June 22, 87.

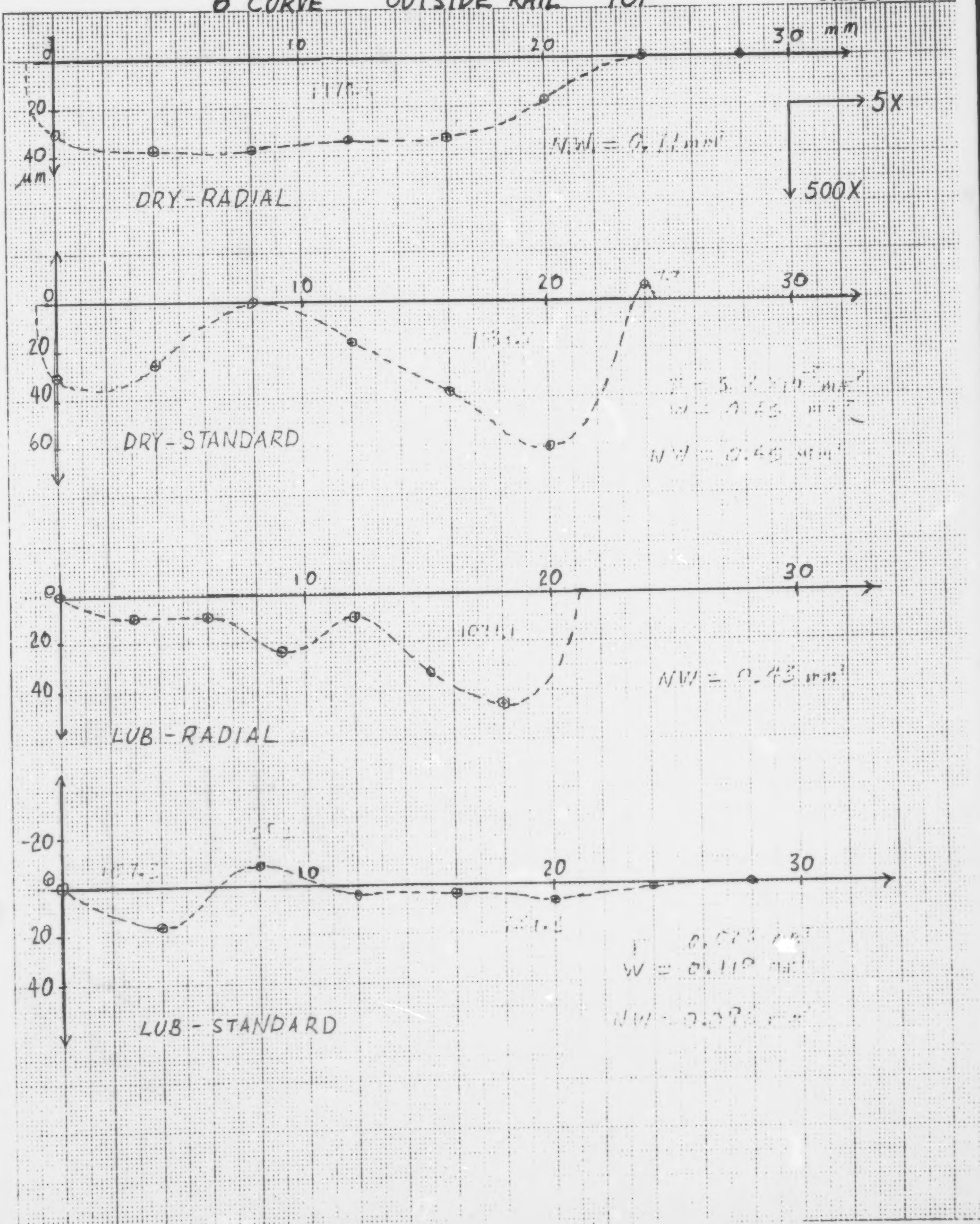


FIGURE 6-B

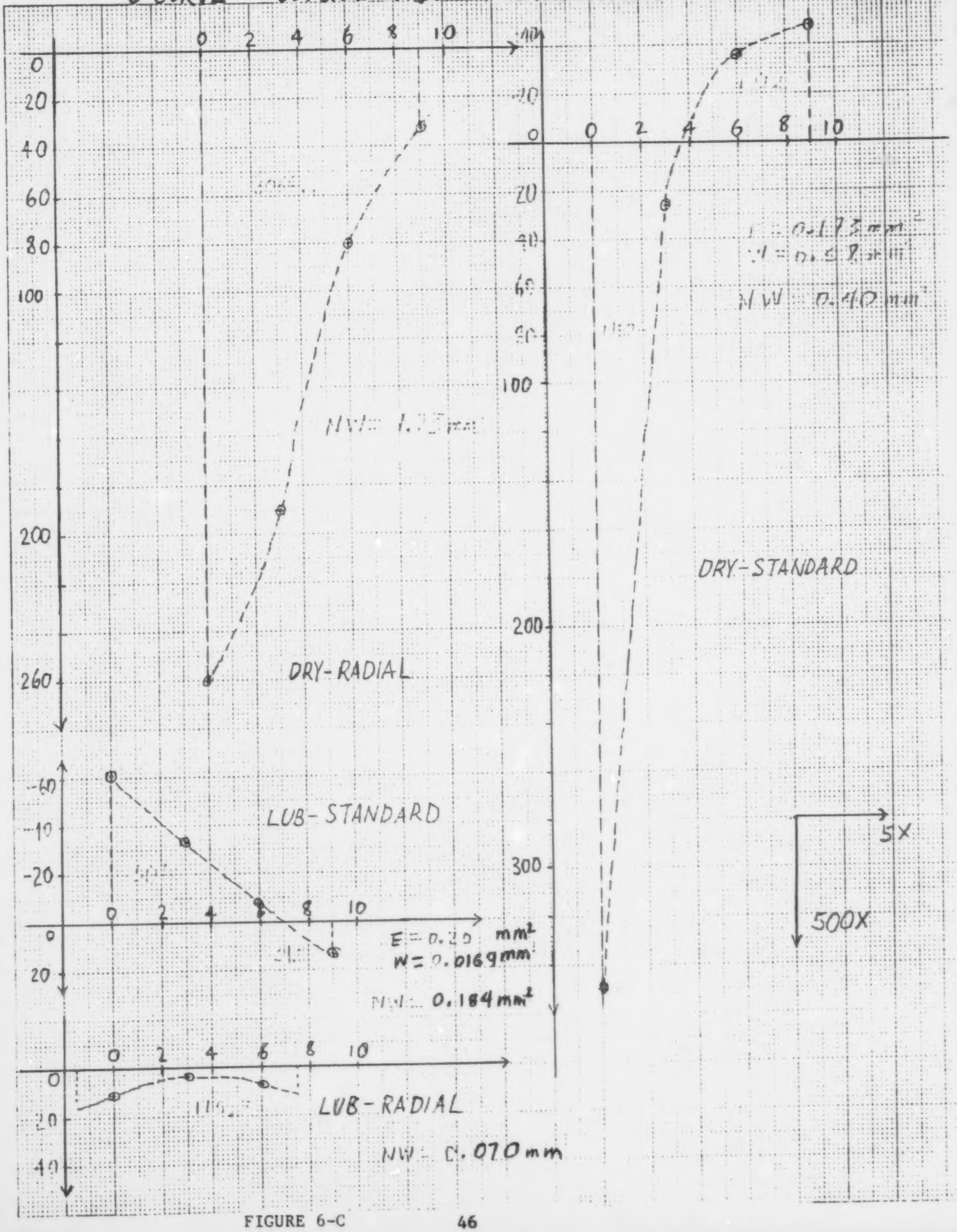

6° CURVE OUTSIDE RAIL GAUGE CORNER (9mm) June 23,

FIGURE 6-C

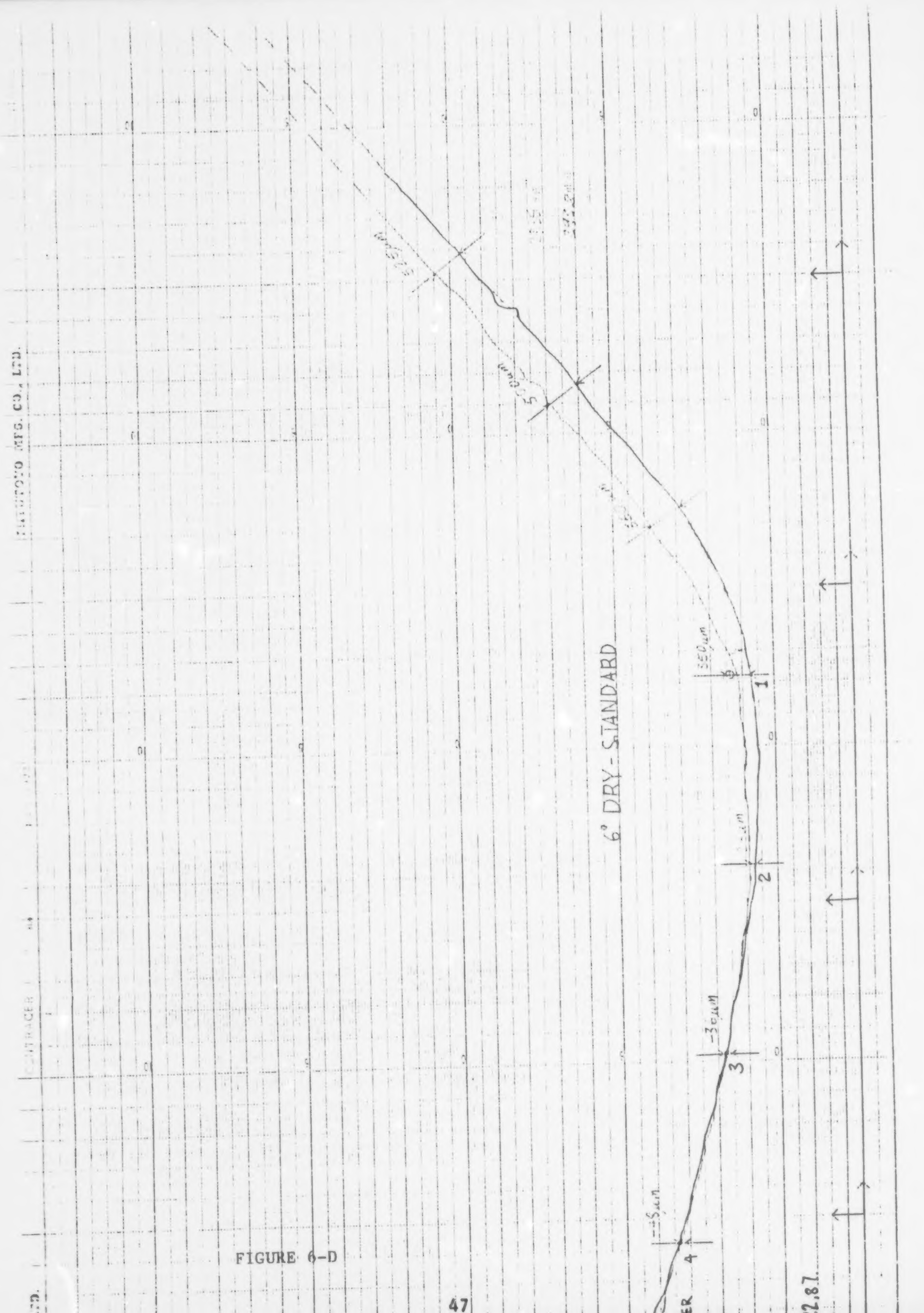
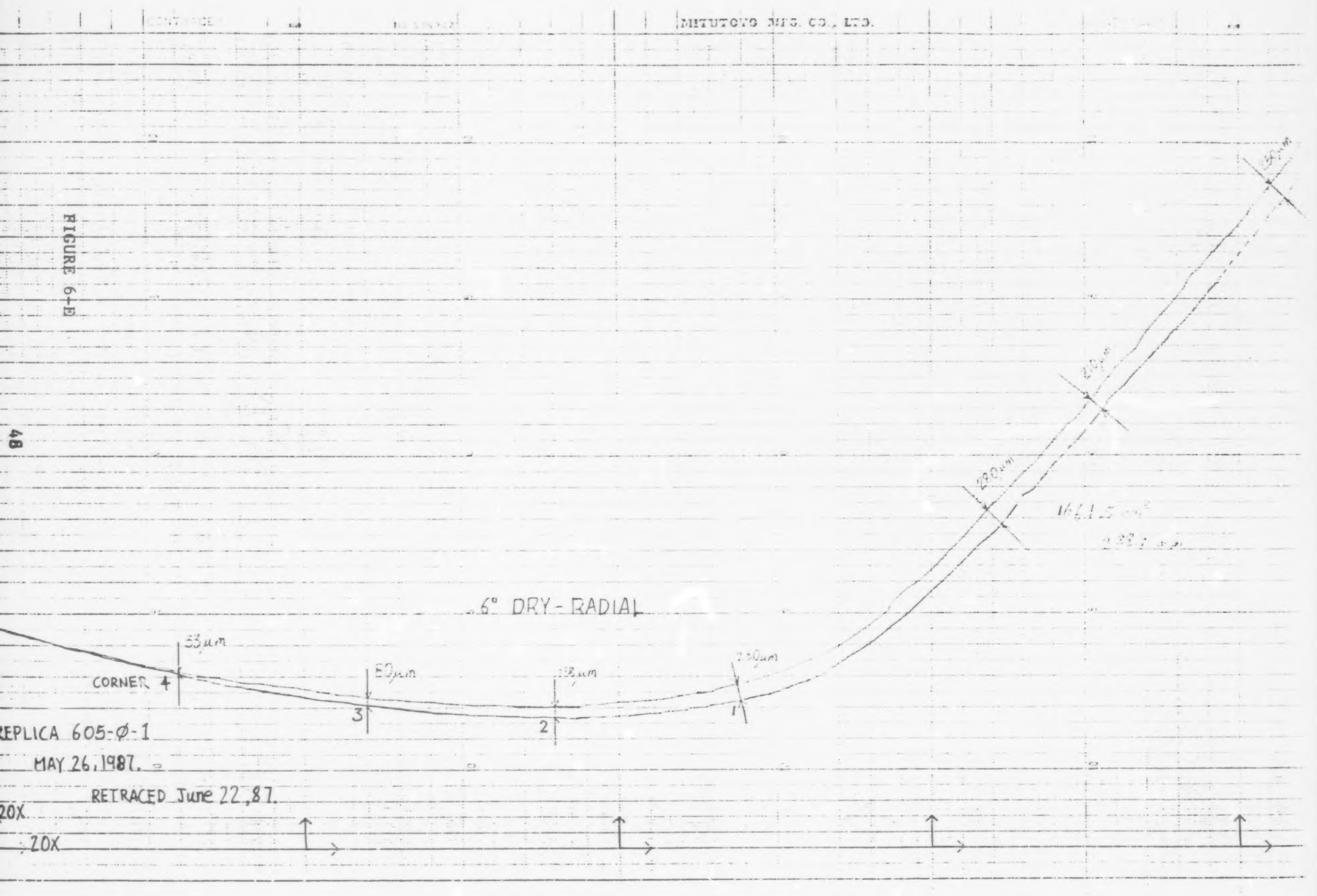

MITUTOYO MFG. CO., LTD.
CONTRACER
6° DRY- STANDARD
525 µm
500 µm
5
550 µm
350 µm
1
2
-30 µm
3
-5 µm
4
ER
22.87.

FIGURE 6-D



6° DRY-RADIAL

REPLICA 605-Ø-1

MAY 26, 1987.

RETRACED June 22, 87.

FIGURE 6-E

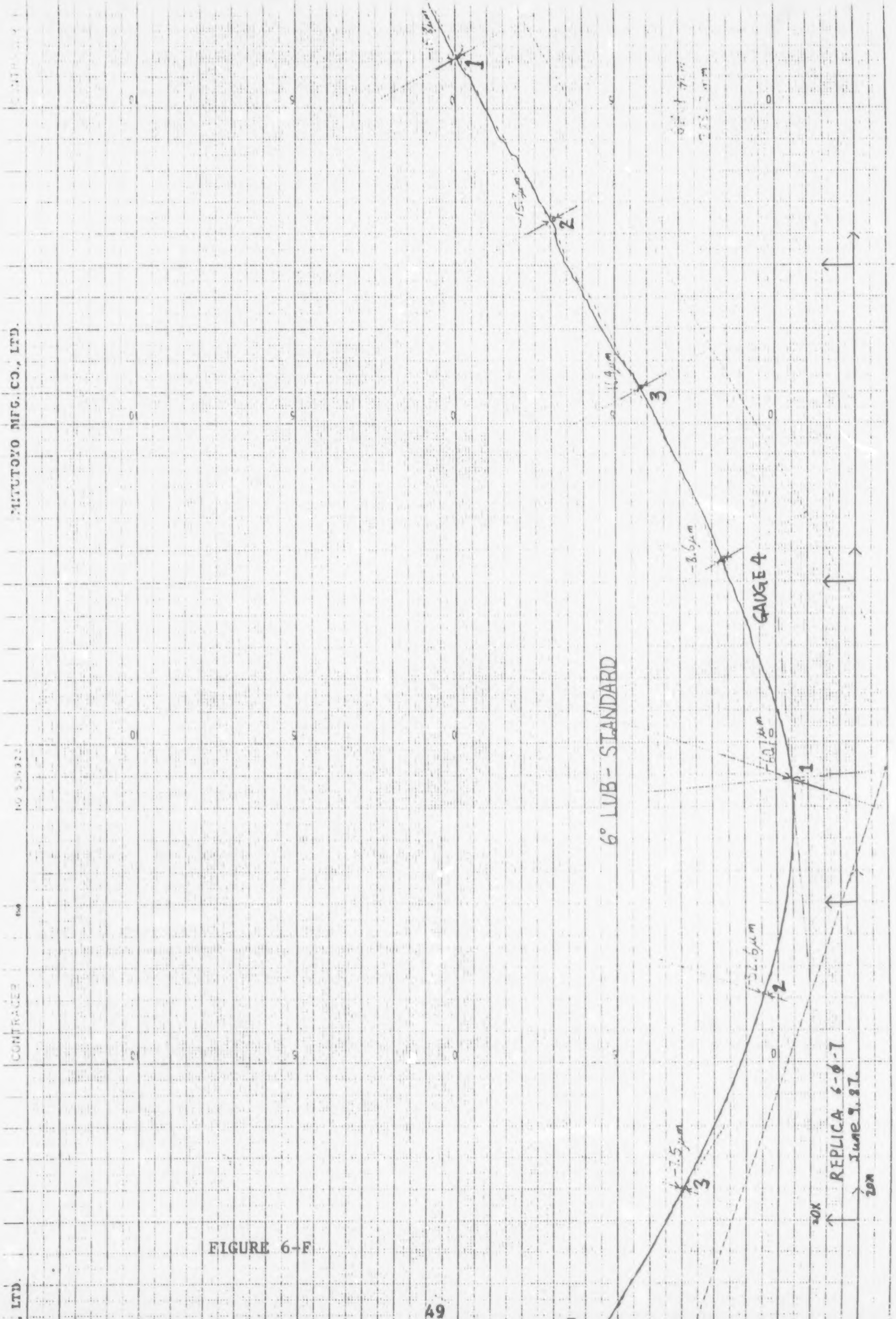

MITUTOYO MFG. CO., LTD.
CONTRACER
6° LUB - STANDARD
GAUGE 4
REPLICA 6-ϕ-7
June 9, 87.
-15.7μm
-11.4μm
-3.6μm
4.01μm
-31.6μm
-7.5μm
1
2
3
1
2
3
20X
20X

FIGURE 6-F

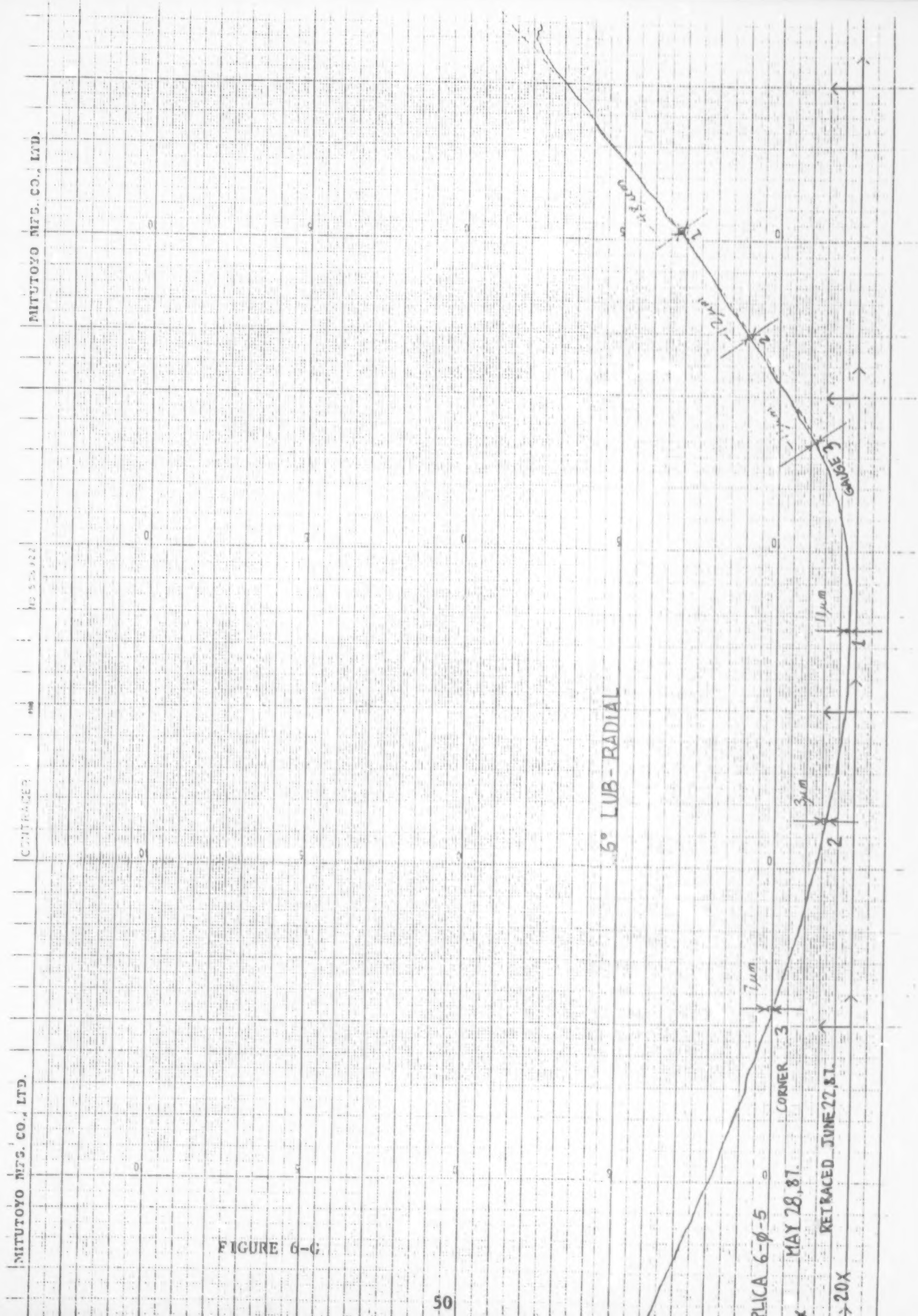

MITUTOYO MFG. CO., LTD.
6° LUB-RADIAL
-12µm
2
-11µm
GAUGE 3
11µm
1
3µm
2
7µm
CORNER 3
PLICA 6-φ-5
MAY 28, 87.
RETRACED JUNE 22, 87.
20X

FIGURE 6-C

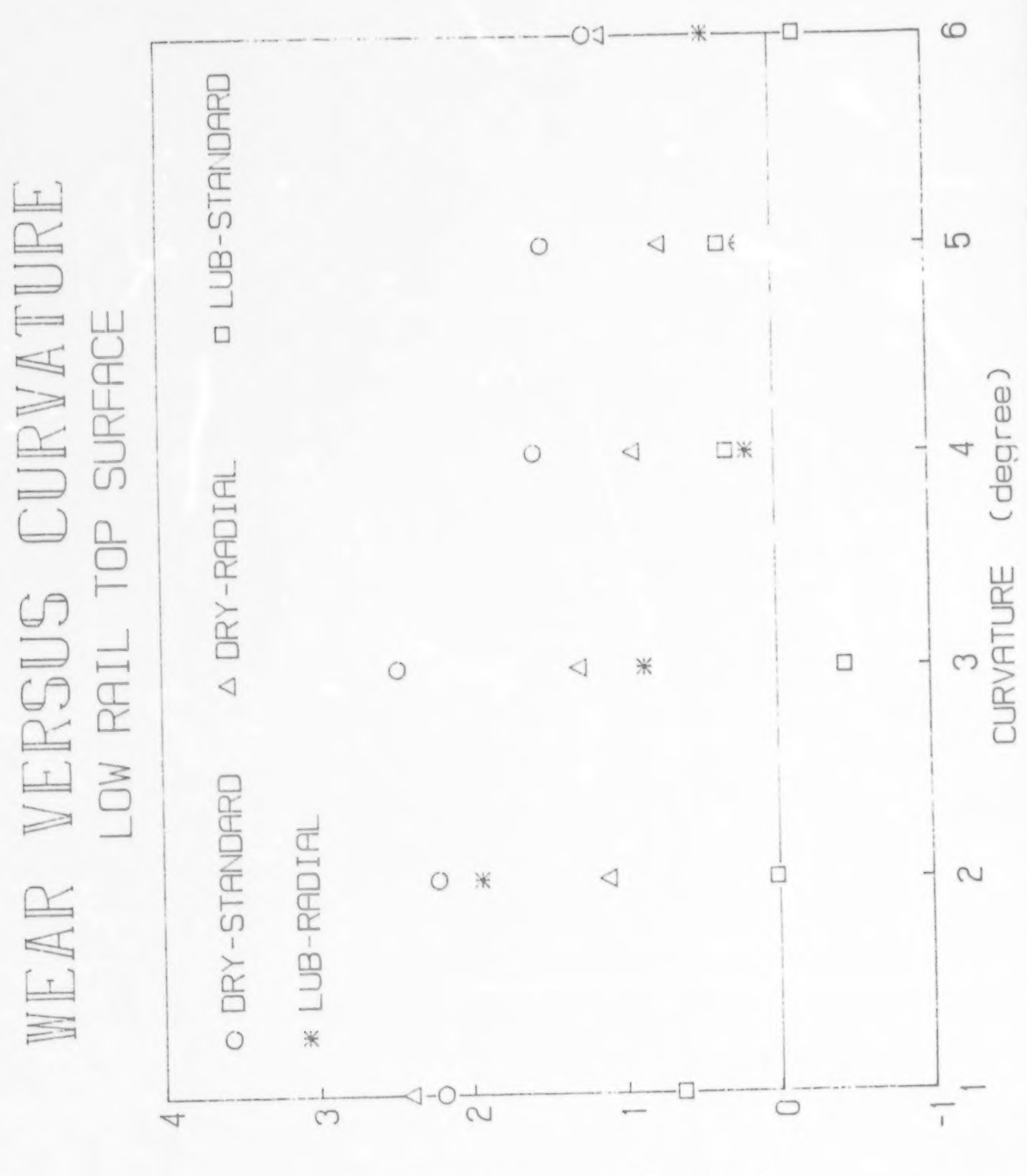

WEAR VERSUS CURVATURE
LOW RAIL TOP SURFACE
○ DRY-STANDARD
△ DRY-RADIAL
□ LUB-STANDARD
✳ LUB-RADIAL
NET WEAR (mm X mm)
4
3
2
1
0
-1
1
2
3
4
5
6
CURVATURE (degree)

FIGURE 7-A

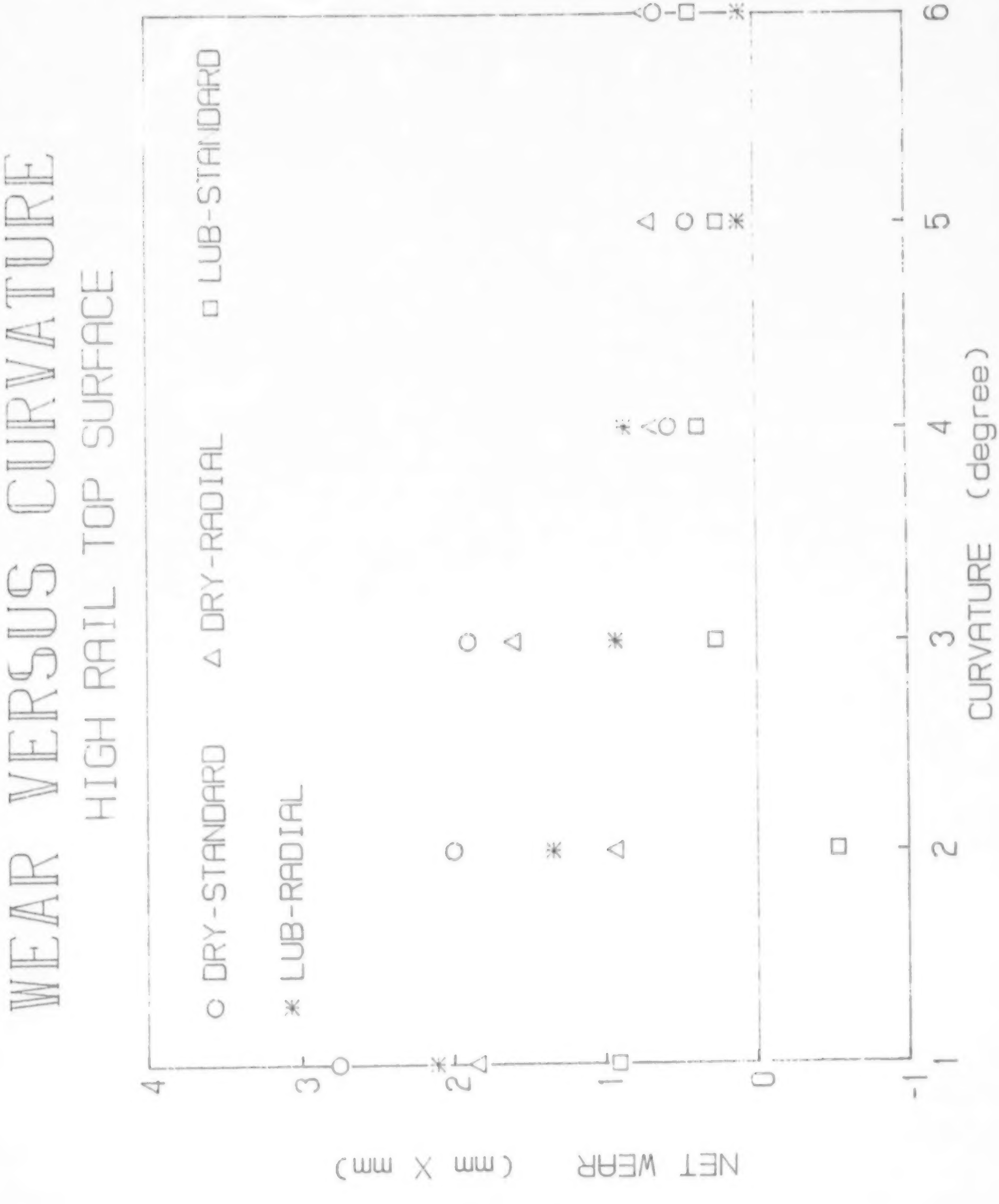

WEAR VERSUS CURVATURE
HIGH RAIL TOP SURFACE
○ DRY-STANDARD
△ DRY-RADIAL
□ LUB-STANDARD
* LUB-RADIAL
NET WEAR (mm X mm)
4
3
2
1
0
-1
1
2
3
4
5
6
CURVATURE (degree)

FIGURE 7-B

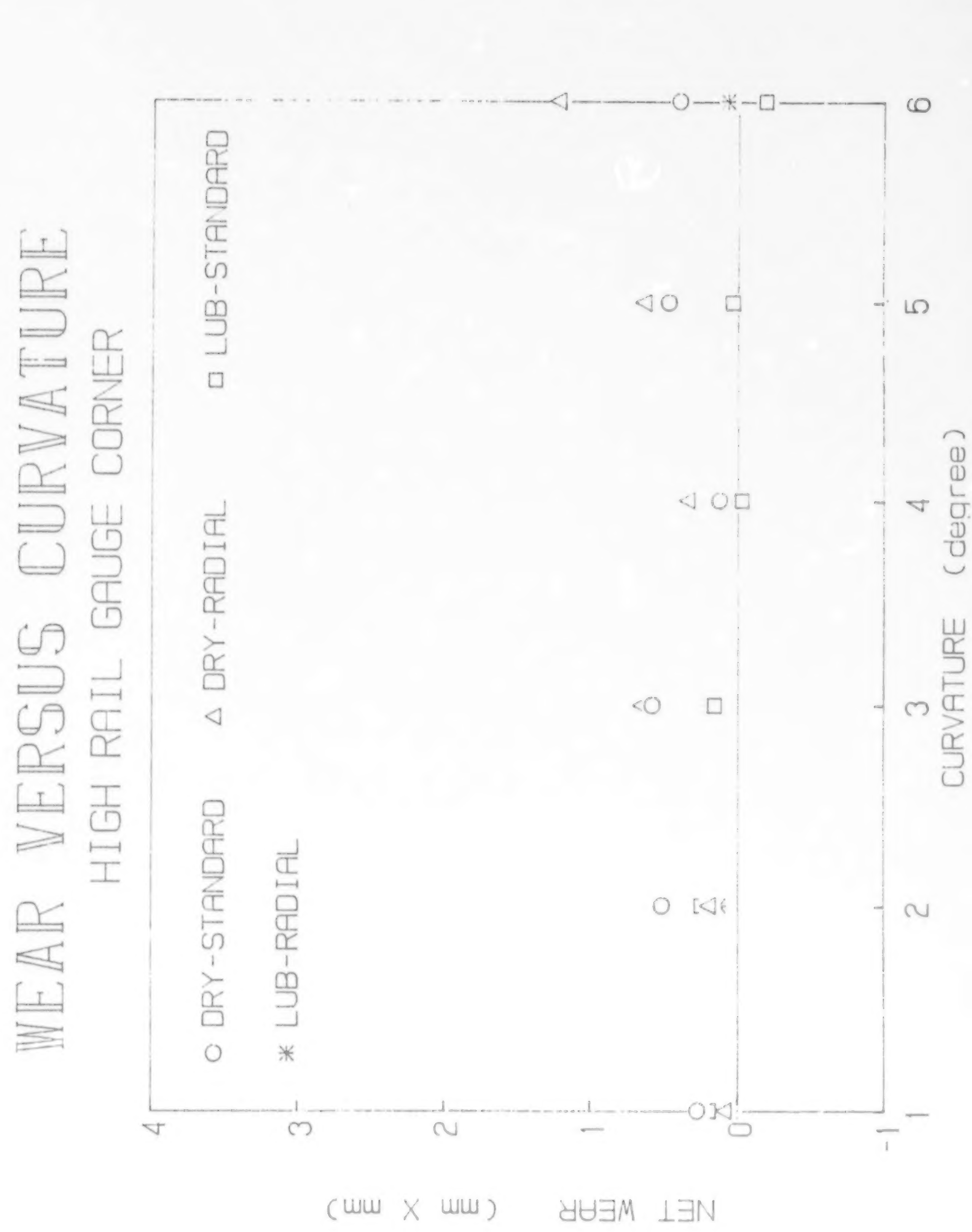

WEAR VERSUS CURVATURE
HIGH RAIL GAUGE CORNER
○ DRY-STANDARD
△ DRY-RADIAL
□ LUB-STANDARD
* LUB-RADIAL
NET WEAR (mm X mm)
4
3
2
1
0
-1
CURVATURE (degree)
1
2
3
4
5
6

FIGURE 7-C

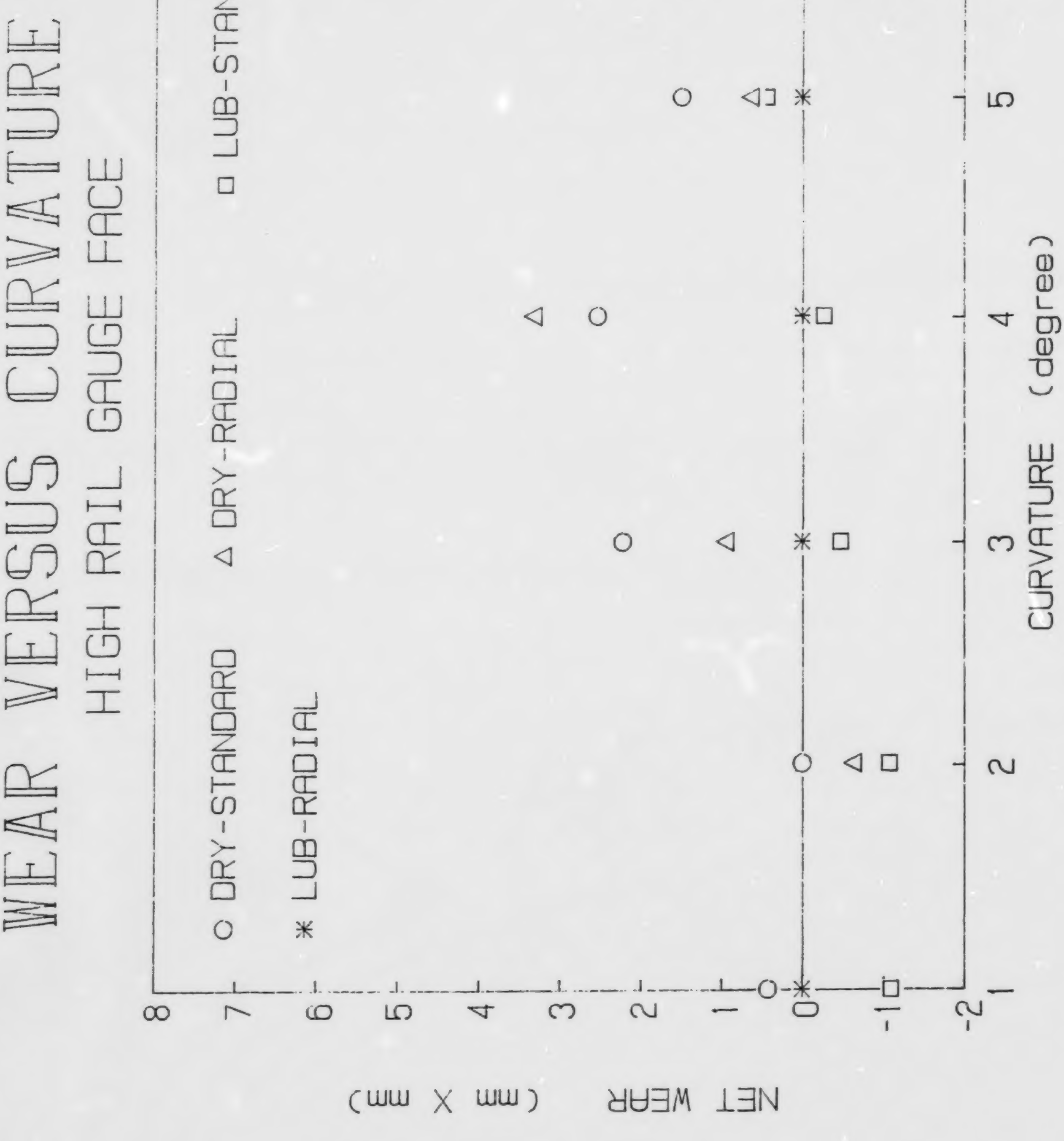

WEAR VERSUS CURVATURE
HIGH RAIL GAUGE FACE
○ DRY-STANDARD
△ DRY-RADIAL
□ LUB-STANDARD
* LUB-RADIAL
NET WEAR (mm X mm)
8
7
6
5
4
3
2
1
0
-1
-2
1
2
3
4
5
6
CURVATURE (degree)

FIGURE 7-D

APPENDIX C

MEASUREMENT OF RAIL PROFILES
FOR THE PERIOD MAY 1986 - SEPT. 1988
BC RAIL TUMBLER RIDGE SUBDIVISION

CN RAIL TECHNICAL RESEARCH CENTRE
JANUARY 1989

BC RAIL - TUMBLER RIDGE SUB

Measurement of Rail Profiles for the Period May 1986 - Sept 1988

The following memo contains a description of the file contents , results of the processing and analysis of the BC RAIL - Tumbler Ridge Sub rail profiles. The required software for the processing of the raw data, acquired using the CN Profilometer, was developed by Kelly Doig - Project Engineer CN Technical Research Centre. Processing and analysis of the rail profile data was performed by Roberto Pellizzari - Project Engineer CN Technical Research Centre.

The "As Received" rail profiles when plotted exhibited numerous irregulaties in the shape of the rail profile. The most common irregulaties requiring corrections are listed below;

- corrections to the titles (e.g. date, rail site ID)

- irregularities to the top of rail (e.g. spikes)
  ... Due to repeated data point entry, or incorrect data point sign (+/-)

- irregularities to the splice bars (e.g. splice bar not linear)
  ...Due to slip of the profilometer probe; lack or abundance of data point

- apparent lateral shift of the rail profile
  ... This apparent lateral shift was most prominent on the last rail profile measurement, Sept 1988. Intuitively, it was concurred that consecutive rail profile measurements should be congruent at two distinct locations, namely at the bottom end of the rail gauge face and top end of the rail head field side extremeties, where rail grinding was not obvious (i.e. theoretically, these locations are not subjected to wear). Hence data points were modified to project this observation. It is not clear why an apparent lateral shift in rail profile has occurred, however possible explanations for this phenomena are i) lack or abundance of data points, not readily noticeable on the old profilometer data points, ii) incorrect positioning of the profilometer leading to a different splice bar reference

or tilted rail profile, or iii) phenoma that actually shifted the splice bar (e.g. splice bar hit by moving machinery).

... The rail profiles were subsequently ajusted by manually re-defining the splice bar data points, in order to cause the rail profile to re-align itself laterally. However, this procedure might have induced a slight uplift of the rail profile, of the order of 0.005".

- apparent vertical shift of the rail profile

... It was observed that the rail profile data points recorded by the BC Rail representative had a high occurence of top of rail vertical shift at the origin reference point (in the vicinity of the rail head midpoint). This phenomena was due to an incorrect return to the origin. Possible causes for this occurrence are i) spring loaded profilometer probe slipped when it went off the field side of the rail, or ii) spring loaded profilometer probe was dropped instead of being gently placed on the top of rail during the return stage. These latter conditions are known to induce an error into the dial gauge read-out value for the y-coordinate. It was observed on the printed field recordings of the data points that the return y-coordinate value of the origin was not the same as the first reading of the origin.

- NB: For the rail profile measurements #1 and #2, the old profilometer only recorded the y-coordinates of the profile. The x-coordinate was automatically inserted using an appropriate software program, dictated by a pre-determined data point acquisition pattern. Hence, for the first two (2) series of rail profile measurements, it was impossible to detect if, during the actual acquisition of the data points, the operator did not follow the specified acquisition pattern. For example, skipped an x-coordinate interval or varied the x-coordinate interval from the dictated value. For the remainder of the rail profile measurements, the CN Profilometer was modified to measure both x and y-coordinates of the rail head profile.

Folder no. 1: Processed Rail Site Data Files

Included in this folder are the following print-outs of processed data files;

- Print-out of file "TUMBLIST" generated from the processing of "LIST_RAILS.RUN". It is a summary of the input master file for the complete rail site. The following nomenclature applies to the titles;

RAILID: rail site identification
e.g. rail id #4991 designates mile point 49.9 (first 3 digits of ID) and rail site location 1 (last digit of ID)

rail site location are as follows, for an increasing mileage direction;
1: entry to curve, left rail, location #11
2: entry to curve, right rail, location #12
3: middle of curve, left rail, location #21
4: middle of curve, right rail, location #22
5: exit of curve, left rail, location #31
6: exit of curve, right rail, location #32

SUBDIVISION: BC RAIL Subdivision - Tumbler Ridge Sub

DATE1: Rail profile measurement date

MILE: Tumbler Ridge Sub mileboard

DEGC: Degree of curvature (degrees)

LOC: Rail site location no. (see RAILID above)

GRADE: grade of track (percentage)

CANT: Rail cant angle (radians)
NB: tie plates are canted 1/40 = 0.0250 rads

PANG: Clinometer reading of profilometer position on the rail site (degrees)

TANG: Clinometer reading of the inclination of the track.
measured on a beam placed across the rail heads at the rai
site (degrees)

GAUGE: Track gauge (inches)

- Print-out of the complete rail site input master file "MASTER"

the list order is as follows:

- Rail site ID
- Date of rail profile measurement
- Rail measurement site (BC RAIL Subdivision)
- Mileboard
- Degree of curvature (degrees)
- High or Low rail in the direction of increasing mileage
  (Low = 0, High = 1)
  - left hand curve ...low rail = left rail
    right hand curve ...low rail = right rail
- Rail site location no.
- Grade in the direction of increasing mileage
  (percentage, +ve uphill, -ve downhill)
- Rail cant (radians)
- Profilometer inclination on the rail head (degrees)
- Track inclination (degrees)
- Track gauge (inches)
- Rail manufacturer
- Rail manufacturer stamp
- Rail treatement class
- Rail weight class
- Rail date of manufacture
- Type of tie (W=wood, C=concrete, S=steel)
- Type of fastener

- Print-out of LOTUS file "BCTRAIN.WK1" for the evaluation of train tonnage per rail site per rail profile measurement period

- Print-out of file "TUMBAREA.PRN" generated from processing of "AREA_RAILS.RUN" for the evaluation of rail wear parameters, namely, rail head height and area loss, and rail gauge width and area loss. The nomenclature for the titles is as follows:

RAILID: rail site identification

DATE: Date of rail profile measurement

POS: Rail site location no.

H/L: High / Low rail (Low = 0, High = 1)

DG_CUR: Degree of curvature (degrees)

TOP_CHNG: Top of rail head height loss, measured at head mid-point (inches)

AREA_T_CHNG: Top of rail head area loss (sq. in.)

GAGE_CHNG: Gauge width loss, loss of gauge face dimension measured at 5/8" from top of rail head (inches)

AREA_G_CHNG: Gauge area loss (sq. in.)

NB: Gauge width and area loss apply to only one rail head. For gauge widening calculations, add the respective gage width loss of the two (2) mate rails.

TON: Tonnage (tons)

NB: Dimensional loss and area loss calculations are reference to the base profile of May 1986.

- Photocopy of RS/1 Graphics and Statistical Analysis software package for the interpretation of the regression results of the wear parameters.

Folder no. 2: Rail Profile and Wear Plots

- Complete set of rail profile and wear plots for the periods:

May 1986
Sept 1986
Sept 1987
May 1988
Sept 1988

Folder no. 3: Rail Wear Plots

- Rail Wear Graphs of the following type

i) Top Head Height Loss vs Tonnage

ii) Top Head Area Loss vs Tonnage

iii) Gauge Width Loss vs Tonnage

iv) Gauge Area Loss vs Tonnage

plotted seperately for each - degree of curvature
- High and Low rail

The nomenclature for the rail wear graphs is as follows;

graphs TUMBAREAxyz where x,y,z, designate the following;
x: curvature reference no. 1 = 0 deg curve
no. 2 = 1 deg curve
no. 3 = 2 deg curve
no. 4 = 3 deg curve
no. 5 = 3.5 deg curve
no. 6 = 4 deg curve
no. 7 = 5 deg curve
no. 8 = 6 deg curve

y: abscissa no. 1 = Top Head Height Loss
no. 2 = Top Head Area Loss
no. 3 = Gauge Width Loss
no. 4 = Gauge Area Loss

z: High (1) or Low (0) rail

NB: For the case of 0 degree curve, no distinction was made as to High or Low rail. Both, high and low rails were considered for the wear parameter analysis.

- Rail Wear regression "ANOVA" tables, designated "AOV" tables

The nomenclature for the rail wear tables is as follows;

tables ANOVxyz where x,y,z, are as defined above.

- The software package used for the graphing and regression analysis is : RS/1 Graphics and Statistical Analysis software package, BBN Software Products Corporation

- The regression analysis was performed using the following conditions:
  - Power Curve curve-fit function of the type $f(x) = A\ X^B$
  - Initial iterative value for the coefficients A and B for the curve fitting routine are shown on the INITVAL table
  - Consideration of only positive wear parameters, that is, positive height or gauge loss and area loss (negative wear parameters indicative of head or gauge face build-up were rejected in the regression analysis)
  - Top head height loss and area loss curve-fit function was specified only as an increasing function
  - Gauge width loss and area loss curve-fit function was specified as both an increasing and decaying function. The decaying function fit (i.e. B is negative) occured only twice due to insufficient valid positive wear data points.

- All relevant rail locations were grouped in each of the graph That is, no distinction was made as to the entry, middle, or exit of the curve for the regression analysis of the wear parameters

Roberto Pellizzari
Roberto Pellizzari
Project Engineer

CN Technical Research Centre
January 04, 1989

```
4491
05.66
TUMBLER
49.9
1.0
L
11
1.2
0.025
15.25
-0.19
56.5625
ALGOMA
1942B29A
CC
115 RE
04.63
W
SPIKES
4492
05.66
TUMBLER
49.9
1.0
H
12
1.2
0.025
-17.01
-0.19
56.5625
ALGOMA
4145F32A
CC
115 RE
10.62
W
SPIKES
4493
05.66
TUMBLER
49.9
1.0
L
21
1.2
0.025
15.33
-0.34
56.625
ALGOMA
4177F2104
CC
115 RE
10.82
W
SPIKES
4994
05.66
TUMBLER
```

MASTER FILE

LIST FORMAT

- RAIL SITE ID
- DATE OF PROFILE
- SITE
- MILE POINT
- DEG CURVATURE
- HIGH / LOW RAIL
- LOCATION ID
- GRADE
- CANT
- CLINOMETER PROFILUMETER READING
- CLINOMETER TRACK READING
- GAUGE
- RAIL MANUFACTURER
- RAIL STAMP
- RAIL TREATMENT
- RAIL WEIGHT CAP.
- RAIL DATE MANUFACTURE
- TIES TYPE (WOOD)
- FASTENER TYPE

```
49.9
1.0
H
22
1.2
0.025
-16.33
-0.34
56.625
ALGOMA
0951B12D
CC
115 RE
10.62
W
SPIKES
4995
05.86
TUMBLER
49.9
1.0
L
31
1.2
0.025
16.45
-0.19
56.5
ALGOMA
4177F211B
CC
115 RE
10.82
W
SPIKES
4996
05.86
TUMBLER
49.9
1.0
H
32
1.2
0.025
-16.48
-0.19
56.5
ALGOMA
4196F32B
CC
115 RE
10.62
W
SPIKES
6051
05.86
TUMBLER
60.5
1.0
L
```

```
11
0.8
0.025
15.49
-0.33
56.50
ALGOMA
1762B29D
CC
115 RE
04.63
W
SPIKES
6052
05.86
TUMBLER
60.5
1.0
H
12
0.8
0.025
-16.50
-0.33
56.5
ALGOMA
4160F34C
CC
115 RE
10.82
W
SPIKES
6053
05.86
TUMBLER
60.5
1.0
L
21
0.8
0.025
16.15
-0.37
56.50
ALGOMA
4155F14C
CC
115 RE
10.62
W
SPIKES
6054
05.86
TUMBLER
60.5
1.0
H
22
0.8
0.025
```

```
-17.20
-0.37
56.50
ALGOMA
4146F29B
CC
115 RE
10.82
W
SPIKES
6055
05.86
TUMBLER
60.5
1.0
L
31
0.8
0.025
15.55
-0.30
56.50
ALGOMA
4156F38C
CC
115 RE
10.62
W
SPIKES
6056
05.86
TUMBLER
60.5
1.0
H
32
0.8
0.025
-16.50
-0.30
56.50
ALGOMA
4146F18B
CC
115 RE
10.62
W
SPIKES
5231
05.86
TUMBLER
52.3
2.0
H
11
1.2
0.025
17.07
0.45
56.5
```

```
ALGOMA
4178F37C
CC
115 RE
10.62
W
SPIKES
5232
05.86
TUMBLER
52.3
2.0
L
12
1.2
0.025
-16.03
0.45
56.5
ALGOMA
0786628D
CC
115 RE
04.63
W
SPIKES
5233
05.86
TUMBLER
52.3
2.0
H
21
1.2
0.025
16.36
0.36
56.5
ALGOMA
4165F46B
CC
115 RE
09.62
W
SPIKES
5234
05.86
TUMBLER
52.3
2.0
L
22
1.2
0.025
-16.2
0.36
56.5
ALGOMA
1756CE18C
CC
```

```
115 RE
04.83
W
SPIKES
5235
05.86
TUMBLER
52.3
2.0
H
31
1.2
0.025
17.00
0.43
56.5
ALGUMA
4178F29C
CC
115 RE
10.82
W
SPIKES
5236
05.86
TUMBLER
52.3
2.0
L
32
1.2
0.025
-16.04
0.43
56.5
ALGUMA
1756B258
CC
115 RE
04.83
W
SPIKES
5251
05.86
TUMBLER
52.5
2.0
L
11
1.2
0.025
16.04
-0.18
56.625
ALGUMA
4145F178
CC
115 RE
10.82
W
SPIKES
5252
05.86
TUMBLER
52.5
2.0
H
12
1.2
0.025
-17.20
-0.18
56.625
ALGUMA
1756D15C
CC
115 RE
04.83
W
SPIKES
5253
05.86
TUMBLER
52.5
2.0
L
21
1.2
0.025
16.35
-0.35
56.625
ALGUMA
4137F178
CC
115 RE
10.82
W
SPIKES
5254
05.86
TUMBLER
52.5
2.0
H
22
1.2
0.025
-16.50
-0.35
56.625
ALGUMA
1756B15A
CC
115 RE
04.83
W
SPIKES
5255
05.86
TUMBLER
52.5
2.0
L
31
1.2
0.025
15.50
-0.13
56.5625
ALGUMA
4177F178
CC
115 RE
10.82
W
SPIKES
5256
05.86
TUMBLER
52.5
2.0
H
32
1.2
0.025
-17.26
-0.13
56.5625
ALGUMA
1756B46A
CC
115 RE
04.83
W
SPIKES
5591
05.86
TUMBLER
55.9
3.5
H
11
1.10
0.025
16.50
0.35
56.75
ALGOMA
1887B16C
CC
115 RE
04.83
W
SPIKES
5592
05.86
TUMBLER
55.9
3.5
L
12
1.10
0.025
-16.15
0.35
56.75
ALGUMA
1755B31D
CC
115 RE
04.83
W
SPIKES
5593
05.86
TUMBLER
55.9
3.5
H
21
1.10
0.025
16.52
0.34
56.75
ALGUMA
1944B19D
CC
115 RE
04.83
W
SPIKES
5594
05.86
TUMBLER
55.9
3.5
L
22
1.10
0.025
-16.30
0.34
56.75
ALGUMA
1783B11A
CC
115 RE
04.83
W
SPIKES
5595
05.86
TUMBLER
55.9
3.5
H
31
1.10
```

```
0.025
15.42
0.24
56.625
ALGUMA
1763B111B
CC
115 RE
04.63
W
SPIKES
5596
05.06
TUMBLER
55.9
3.5
L
32
1.10
0.025
-16.17
0.24
56.625
ALGUMA
1816B420
CC
115 RE
04.63
W
SPIKES
5561
05.66
TUMBLER
55.6
3.5
L
11
1.10
0.025
15.36
-0.31
56.625
ALGUMA
1761B420
CC
115 RE
04.63
W
SPIKES
5562
05.66
TUMBLER
55.6
3.5
H
12
1.1
0.025
-17.17
-0.31
56.625
ALGUMA
1816B21C
CC
115 RE
04.63
W
SPIKES
5563
05.06
TUMBLER
55.6
3.5
L
21
1.1
0.025
16.36
-0.28
56.687
ALGOMA
1761B426
CC
115 RE
04.63
W
SPIKES
5564
05.66
TUMBLER
55.6
3.5
H
22
1.1
0.025
-16.41
-0.28
56.687
ALGUMA
1816B21B
CC
115 RE
04.83
W
SPIKES
5565
05.66
TUMBLER
55.6
3.5
L
31
1.1
0.025
16.04
-0.29
56.750
ALGUMA
1767B411B
CC
115 RE
04.63
W
SPIKES
5566
05.66
TUMBLER
55.6
3.5
H
32
1.1
0.025
-16.50
-0.29
56.750
ALGOMA
1793B11A
CC
115 RE
04.63
W
SPIKES
5781
05.66
TUMBLER
57.8
4.0
H
11
1.0
0.025
17.00
0.40
56.75
ALGUMA
CRL41220J
CC
115 RE
05.63
W
SPIKES
5782
05.66
TUMBLER
57.6
4.0
L
12
1.0
0.025
-16.04
0.40
56.750
ALGUMA
CRL140618D
CC
115 RE
05.63
W
SPIKES
5783
05.66
TUMBLER
57.8
4.0
H
21
1.0
0.025
16.18
0.42
56.625
ALGOMA
CRL61022C
CC
115 RE
04.63
W
SPIKES
5784
05.66
TUMBLER
57.6
4.0
L
22
1.0
0.025
-15.40
0.42
52.625
ALGOMA
CRM48105G
CC
115 RE
04.63
W
SPIKES
5785
05.66
TUMBLER
57.6
4.0
H
31
1.0
0.025
16.39
0.41
56.75
ALGUMA
CRM481024E
CC
115 RE
04.63
W
SPIKES
5786
```

```
05.86
TUMBLER
57.6
4.0
L
32
1.0
0.025
-15.9
0.41
56.75
ALGOMA
CRM48109E
CC
115 RE
04.83
W
SPIKES
5891
05.86
TUMBLER
58.9
4.0
L
11
1.0
0.025
16.33
-0.25
56.6875
ALGOMA
CRM481015C
CC
115 RE
04.83
W
SPIKES
5892
05.86
TUMBLER
58.9
4.0
H
12
1.0
0.025
-16.25
-0.25
56.6875
ALGOMA
CRM43744D
CC
115 RE
02.83
W
SPIKES
5893
05.86
TUMBLER
58.9
```

```
4.0
L
21
1.0
0.025
16.45
-0.15
56.75
ALGOMA
CRL481013C
CC
115 RE
04.83
W
SPIKES
5894
05.86
TUMBLER
58.9
4.0
H
22
1.0
0.025
-17.30
-0.15
56.75
ALGOMA
CRM43715G
CC
115 RE
01.83
W
SPIKES
5895
05.86
TUMBLER
58.9
4.0
L
31
1.0
0.025
15.460
-0.28
56.75
ALGOMA
CRM481013F
CC
115 RE
04.83
W
SPIKES
5896
05.86
TUMBLER
58.9
4.0
H
32
```

```
1.0
0.025
-17.05
-0.28
56.750
ALGOMA
CRM43712K
CC
115 RE
02.82
W
SPIKES
5291
05.86
TUMBLER
52.9
5.0
H
11
1.0
0.025
17.45
1.29
56.8125
ALGOMA
CRL104812J
CC
115 RE
04.83
W
SPIKES
5292
05.86
TUMBLER
52.9
5.0
L
12
1.0
0.025
-15.34
1.29
56.8125
ALGOMA
CPL10468D
CC
115 RE
04.83
W
SPIKES
5293
05.86
TUMBLER
52.9
5.0
H
21
1.0
0.025
17.55
```

```
1.32
56.750
ALGOMA
CRL104827D
CC
115 RE
04.83
W
SPIKES
5294
05.86
TUMBLER
52.9
5.0
L
22
1.0
0.025
-15.24
1.32
56.75
ALGOMA
CRL10465F
CC
115 RE
04.83
W
SPIKES
5295
05.86
TUMBLER
52.9
5.0
H
31
1.0
0.025
16.43
1.26
56.6875
ALGOMA
CRL104826
CC
115 RE
04.83
W
SPIKES
5296
05.86
TUMBLER
52.9
5.0
L
32
1.0
0.025
-15.29
1.26
56.6875
ALGOMA
```

```
CRL10465E
CC
115 RE
04.83
W
SPIKES
5621
05.86
TUMBLER
56.2
5.0
L
11
1.0
0.025
15.40
-1.10
56.765
ALGOMA
CRL1310
CC
115 RE
04.83
W
SPIKES
5622
05.86
TUMBLER
56.2
5.0
H
12
1.0
0.025
-17.44
-1.10
56.756
ALGOMA
CRL18411F
CC
115 RE
04.83
W
SPIKES
5623
05.86
TUMBLER
56.2
5.0
L
21
1.0
0.025
15.20
-0.59
56.765
ALGOMA
CRL13108B
CC
115 RE
04.83
W
SPIKES
5624
05.86
TUMBLER
56.2
5.0
H
22
1.0
0.025
-16.42
-0.59
56.756
ALGOMA
CRL104115L
CC
115 RE
04.83
W
SPIKES
5625
05.86
TUMBLER
56.2
5.0
L
31
1.0
0.025
15.30
-1.00
56.625
ALGOMA
CRL13108C
CC
115 RE
04.83
W
SPIKES
5626
05.86
TUMBLER
56.2
5.0
H
32
1.0
0.025
-17.07
-1.00
56.625
ALGOMA
CRL1241K
CC
115 RE
04.83
W
SPIKES
5841
05.86
TUMBLER
58.4
6.0
H
11
0.9
0.025
17.33
2.02
57.00
ALGOMA
CRM481016C
CC
115 RE
04.83
W
SPIKES
5842
05.86
TUMBLER
58.4
6.0
L
12
0.9
0.025
-14.55
2.02
57.00
ALGOMA
CRL131010E
CC
115 RE
04.83
W
SPIKES
5843
05.86
TUMBLER
58.4
6.0
H
21
0.9
0.025
17.51
2.14
57.00
ALGOMA
CRM431019E
CC
115 RE
04.83
W
SPIKES
5844
05.86
TUMBLER
58.4
6.0
L
22
0.9
0.025
-14.12
2.14
57.00
ALGOMA
CRL131010D
CC
115 RE
04.83
W
SPIKES
5845
05.86
TUMBLER
58.4
6.0
H
31
0.9
0.025
16.27
2.15
57.1250
ALGOMA
CRM481014F
CC
115 RE
04.83
W
SPIKES
5846
05.86
TUMBLER
58.4
6.0
L
32
0.9
0.025
-13.50
2.15
57.1250
ALGOMA
CRM481017E
CC
115 RE
04.83
W
SPIKES
5801
05.86
TUMBLER
58.0
6.0
L
```

```
11
1.2
0.025
14.10
-1.33
56.75
ALGOMA
CKL141222
CC
115 RE
05.86
W
SPIKES
5802
05.86
TUMBLER
58.0
6.0
H
12
1.2
0.025
-18.10
-1.33
56.75
ALGOMA
CKL1412211
CC
115 RE
05.83
W
SPIKES
5803
05.86
TUMBLER
58.0
6.0
L
21
1.2
0.025
14.22
-1.30
56.75
ALGOMA
CRM41809D
CC
115 RE
04.83
W
SPIKES
5804
05.86
TUMBLER
58.0
6.0
H
22
1.2
0.025
```

```
-17.50
-1.30
56.75
ALGOMA
CKM48109F
CC
115 RE
04.83
W
SPIKES
5805
05.86
TUMBLER
58.0
6.0
L
31
1.2
0.025
14.21
-1.28
56.75
ALGOMA
CRM481026J
CC
115 RE
04.83
W
SPIKES
5806
05.86
TUMBLER
58.0
6.0
H
32
1.2
0.025
-18.11
-1.28
56.75
ALGOMA
CRM48109G
CC
115 RE
04.83
W
SPIKES
5751
05.86
TUMBLER
57.5
0.0
T
11
1.2
0.025
15.49
-0.08
56.625
```

```
ALGOMA
1773B17B
CC
115 RE
04.83
W
SPIKES
5752
05.86
TUMBLER
57.5
0.0
T
12
1.2
0.025
-17.10
-0.08
56.625
ALGOMA
1774B45A
CC
115 RE
04.83
W
SPIKES
3211
05.86
TUMBLER
32.1
1.0
H
11
-1.5
0.025
17.20
0.31
56.5
ALGOMA
1788B23C
CC
115 RE
05.83
W
SPIKES
3212
05.86
TUMBLER
32.1
1.0
L
12
-1.5
0.025
-15.55
0.31
56.50
ALGOMA
1677D04C
CC
```

```
115 RE
05.83
W
SPIKES
3213
05.86
TUMBLER
32.1
1.0
H
21
-1.5
0.025
17.20
0.34
56.625
ALGOMA
2009B49C
CC
115 RE
05.83
W
SPIKES
3214
05.86
TUMBLER
32.1
1.0
L
22
-1.5
0.025
-15.04
0.34
56.625
ALGOMA
1783B12B
CC
115 RE
04.83
W
SPIKES
3215
05.86
TUMBLER
32.1
1.0
H
31
-1.5
0.025
16.35
0.30
56.625
ALGOMA
2005B18C
CC
115 RE
05.83
W
```

```
SPIKES
3216
05.86
TUMBLER
32.1
1.0
L
32
-1.5
0.025
-16.56
0.30
56.625
ALGOMA
1758B15D
CC
115 RE
04.83
W
SPIKES
3201
05.86
TUMBLER
32.0
1.0
L
11
-1.5
0.025
15.40
-0.45
56.625
ALGOMA
1790B188
CC
115 RE
04.83
W
SPIKES
3202
05.86
TUMBLER
32.0
1.0
H
12
-1.5
0.025
-17.08
-0.45
56.625
ALGOMA
1894B43A
CC
115 RE
05.83
W
SPIKES
3203
05.86
TUMBLER
32.0
1.0
L
21
-1.5
0.025
16.11
-0.52
56.5
ALGOMA
1766B46C
CC
115 RE
04.83
W
SPIKES
3204
05.86
TUMBLER
32.0
1.0
H
22
-1.5
0.025
-17.27
-0.52
56.5
ALGOMA
1894B44C
CC
115 RE
05.83
W
SPIKES
3205
05.86
TUMBLER
32.0
1.0
L
31
-1.5
0.025
16.15
-0.35
56.5
ALGOMA
1750B17A
CC
115 RE
04.83
W
SPIKES
3206
05.86
TUMBLER
32.0
1.0
H
32
-1.5
0.025
-17.12
-0.35
56.50
ALGOMA
1676B46C
CC
115 RE
05.83
W
SPIKES
2981
05.86
TUMBLER
29.6
2.0
H
11
-1.4
0.025
17.03
0.40
56.5
ALGOMA
2037B258
CC
115 RE
05.83
W
SPIKES
2982
05.86
TUMBLER
29.6
2.0
L
12
-1.4
0.025
-15.55
0.40
56.5
ALGOMA
2034B9A
CC
115 RE
05.83
W
SPIKES
2983
05.86
TUMBLER
29.6
2.0
H
21
-1.4
0.025
16.41
0.37
56.625
ALGOMA
8031B248
CC
115 RE
05.83
W
SPIKES
2984
05.86
TUMBLER
29.6
2.0
L
22
-1.4
0.025
-16.05
0.37
56.625
ALGOMA
2011B15A
CC
115 RE
05.83
W
SPIKES
2985
05.86
TUMBLER
29.6
2.0
H
31
-1.4
0.025
16.00
0.35
56.5
ALGOMA
2035B33B
CC
115 RE
05.83
W
SPIKES
2986
05.86
TUMBLER
29.8
2.0
L
32
-1.4
0.025
-16.36
0.35
```

```
56.5
ALGOMA
2032B19A
CC
115 RE
05.83
W
SPIKES
2411
05.86
TUMBLER
24.1
2.0
L
11
-1.400
0.025
15.49
-0.45
56.75
ALGOMA
2035B14A
CC
115 RE
04.83
W
SPIKES
2412
05.86
TUMBLER
24.1
2.0
H
12
-1.40
0.025
-16.50
-0.45
56.75
ALGOMA
3809B39B
CC
115 RE
05.83
W
SPIKES
2413
05.86
TUMBLER
24.1
2.0
L
21
-1.40
0.025
15.55
-0.52
56.6250
ALGOMA
2009B40B
CC
115 RE
05.83
W
SPIKES
2414
05.86
TUMBLER
24.1
2.0
H
22
-1.40
0.025
-16.52
-0.52
56.6250
ALGOMA
2015B37D
CC
115 RE
05.83
W
SPIKES
2415
05.86
TUMBLER
24.1
2.0
L
31
-1.40
0.025
16.24
-0.34
56.50
ALGOMA
2009B27A
CC
115 RE
05.83
W
SPIKES
2416
05.86
TUMBLER
24.1
2.0
H
32
-1.40
0.025
-17.10
-0.34
56.50
ALGOMA
2015B25D
CC
115 RE
05.83
W
SPIKES
2531
05.86
TUMBLER
25.3
3.5
H
11
-1.40
0.025
18.07
1.29
56.5
ALGOMA
1297B13A
CC
115 RE
04.83
W
SPIKES
2532
05.86
TUMBLER
25.3
3.5
L
12
-1.40
0.025
-14.57
1.29
56.5
ALGOMA
2015B22C
CC
115 RE
05.83
W
SPIKES
2533
05.86
TUMBLER
25.3
3.5
H
21
-1.40
0.025
17.23
1.16
56.5
ALGOMA
1791B19A
CC
115 RE
04.83
W
SPIKES
2534
05.86
TUMBLER
25.3
3.5
L
22
-1.40
0.025
-16.21
1.16
56.5
ALGOMA
2016B41B
CC
115 RE
05.83
W
SPIKES
2535
05.86
TUMBLER
25.3
3.5
H
31
-1.40
0.025
18.10
1.30
56.5625
ALGOMA
1781B37C
CC
115 RE
04.83
W
SPIKES
2536
05.86
TUMBLER
25.3
3.5
L
32
-1.40
0.025
-15.17
1.30
56.5625
ALGOMA
2039B42C
CC
115 RE
05.83
W
SPIKES
1781
05.86
TUMBLER
17.6
```

```
3.5
L
11
-1.4
0.025
14.45
-2.22
56.75
ALGOMA
1949B43A
CC
115 RE
04.83
W
SPIKES
1782
05.86
TUMBLER
17.8
3.5
H
12
-1.4
0.025
-18.16
-2.22
56.75
ALGOMA
1771B15A
CC
115 RE
04.83
W
SPIKES
1783
05.86
TUMBLER
17.8
3.5
L
21
-1.4
0.025
14.41
-2.16
56.5
ALGOMA
1786B27B
CC
115 RE
04.83
W
SPIKES
1784
05.86
TUMBLER
17.8
3.5
H
22
```

```
-1.4
0.025
-18.40
-2.16
56.5
ALGOMA
1939B35A
CC
115 RE
04.83
W
SPIKES
1785
05.86
TUMBLER
17.8
3.5
L
31
-1.4
0.025
15.12
-2.08
56.625
ALGOMA
1935B25A
CC
115 RE
04.83
W
SPIKES
1786
05.86
TUMBLER
17.8
3.5
H
32
-1.4
0.025
-18.30
-2.08
56.625
ALGOMA
1802B24A
CC
115 RE
05.83
W
SPIKES
2941
05.86
TUMBLER
29.4
4.0
H
11
-1.30
0.025
18.05
```

```
1.49
56.50
ALGOMA
CRL13415E
CC
115 RE
04.83
W
SPIKES
2942
05.86
TUMBLER
29.4
4.0
L
12
-1.30
0.025
-14.19
1.49
56.5
ALGOMA
CRM43711H
CC
115 RE
02.83
W
SPIKES
2943
05.86
TUMBLER
29.4
4.0
H
21
-1.30
0.025
18.12
1.57
56.625
ALGOMA
CRL10415J
CC
115 RE
04.83
W
SPIKES
2944
05.86
TUMBLER
29.4
4.0
L
22
-1.30
0.025
-14.50
1.57
56.625
ALGOMA
```

```
CRM437557A
CC
115 RE
01.83
W
SPIKES
2945
05.86
TUMBLER
29.4
4.0
H
31
-1.30
0.025
18.20
1.48
56.75
ALGOMA
CRL06168K
CC
115 RE
02.83
W
SPIKES
2946
05.86
TUMBLER
29.4
4.0
L
32
-1.30
0.025
-14.30
1.48
56.75
ALGOMA
CRL061621C
CC
115 RE
02.83
W
SPIKES
2911
05.86
TUMBLER
29.1
4.0
L
11
-1.30
0.025
15.23
-2.00
56.625
ALGOMA
CRL10411D
CC
115 RE
```

```
04.83
W
SPIKES
2912
05.86
TUMBLER
29.1
4.0
H
12
-1.30
0.025
-18.22
-2.00
56.625
ALGOMA
CRL10419H
CC
115 RE
04.83
W
SPIKES
2913
05.86
TUMBLER
29.1
4.0
L
21
-1.30
0.025
14.26
-1.53
56.625
ALGOMA
CRL10417D
CC
115 RE
04.83
W
SPIKES
2914
05.86
TUMBLER
29.1
4.0
H
22
-1.30
0.025
-18.36
-1.53
56.625
ALGOMA
CLR104120A
CC
115 RE
04.83
W
SPIKES
2915
05.86
TUMBLER
29.1
4.0
L
31
-1.30
0.025
14.11
-2.00
56.625
ALGOMA
CLR10418C
CC
115 RE
04.83
W
SPIKES
2916
05.86
TUMBLER
29.1
4.0
H
32
-1.30
0.025
17.50
-2.00
56.625
ALGOMA
Not/Avail
CC
115 RE
04.83
W
SPIKES
1951
05.86
TUMBLER
19.5
5.0
H
11
-1.30
0.025
18.37
2.18
56.75
ALGOMA
CRM49141E
CC
115 RE
05.83
W
SPIKES
1952
05.86
TUMBLER
19.5
5.0
L
12
-1.30
0.025
-13.43
2.18
56.75
ALGOMA
CRL140G20H
CC
115 RE
05.83
W
SPIKES
1953
05.86
TUMBLER
19.5
5.0
H
21
-1.30
0.025
19.00
2.00
56.687
ALGOMA
CRL140624K
CC
115 RE
05.83
W
SPIKES
1954
05.86
TUMBLER
19.5
5.0
L
22
-1.30
0.025
-14.45
2.00
56.687
ALGOMA
CRL135517D
CC
115 RE
05.83
W
SPIKES
1955
05.86
TUMBLER
19.5
5.0
H
31
-1.30
0.025
18.40
2.11
56.75
ALGOMA
CRM492523A
CC
115 RE
05.83
W
SPIKES
1956
05.86
TUMBLER
19.5
5.0
L
32
-1.30
0.025
-14.30
2.11
56.75
ALGOMA
CRL13552K
CC
115 RE
05.83
W
SPIKES
2831
05.86
TUMBLER
28.3
6.0
H
11
-1.30
0.025
18.53
01.51
56.75
ALGOMA
CRL135523B
CC
115 RE
05.83
W
SPIKES
2832
05.86
TUMBLER
28.3
6.0
L
12
-1.30
0.025
```

```
-14.19
01.51
56.75
ALGUMA
CRL140615B
CC
115 RE
05.83
W
SPIKES
2833
05.86
TUMBLER
28.3
6.0
H
21
-1.30
0.025
19.29
2.38
56.75
ALGUMA
CRL10413F
CC
115 RE
04.83
W
SPIKES
2834
05.86
TUMBLER
28.3
6.0
L
22
-1.30
0.025
-14.20
2.38
56.750
ALGOMA
CRL104116D
CC
115 RE
04.83
W
SPIKES
2835
05.86
TUMBLER
28.3
6.0
H
31
-1.30
0.025
19.31
2.5
56.34
ALGOMA
CRM43744B
CC
115 RE
02.83
W
SPIKES
2836
05.86
TUMBLER
28.3
6.0
L
32
-1.30
0.025
-14.01
2.5
56.34
ALGUMA
CRL104124A
CC
115 RE
04.83
W
SPIKES
2811
05.86
TUMBLER
28.1
6.0
L
11
-1.30
0.025
13.31
-2.44
56.75
ALGUMA
CRL141219J
CC
115 RE
05.83
W
SPIKES
2812
05.86
TUMBLER
28.1
6.0
H
12
-1.30
0.025
-19.03
-2.44
56.75
ALGUMA
CRL13101E
CC
115 RE
04.83
W
SPIKES
2813
05.86
TUMBLER
28.1
6.0
L
21
-1.30
0.025
13.47
-2.52
56.75
ALGUMA
CRL35510B
CC
115 RE
05.83
W
SPIKES
2814
05.86
TUMBLER
28.1
6.0
H
22
-1.30
0.025
-19.42
-2.52
56.75
ALGUMA
CRL131010F
CC
115 RE
05.83
W
SPIKES
2815
05.86
TUMBLER
28.1
6.0
L
31
-1.30
0.025
13.30
-3.00
56.875
ALGUMA
CRL135520F
CC
115 RE
05.83
W
SPIKES
2816
05.86
TUMBLER
28.1
6.0
H
32
-1.30
0.025
-18.56
-3.00
56.875
ALGUMA
CRM481026F
CC
115 RE
04.83
W
SPIKES
3001
05.86
TUMBLER
30.0
0.0
T
11
-1.50
0.025
16.20
-0.19
56.5
ALGUMA
2012B22B
CC
115 RE
05.83
W
SPIKES
3002
05.86
TUMBLER
30.0
0.0
T
12
-1.50
0.025
-17.00
-0.19
56.5
ALGUMA
017B14A
CC
115 RE
05.83
W
SPIKES
1351
05.86
```

```
TUMBLER
13.5
1.0
H
11
0.4
0.025
17.01
0.35
56.50
ALGOMA
1763B46D
CC
115 RE
04.83
W
SPIKES

1352
05.86
TUMBLER
13.5
1.0
L
12
0.4
0.025
-16.18
0.35
56.5
ALGOMA
2038B45B
CC
115 RE
05.83
W
SPIKES

1353
05.86
TUMBLER
13.5
1.0
H
21
0.4
0.025
17.27
0.35
56.625
ALGOMA
1894B36A
CC
115 RE
05.83
W
SPIKES

1354
05.86
TUMBLER
13.5
1.0
L
22
0.4
0.025
-16.40
0.35
56.625
ALGOMA
2025B35C
CC
115 RE
05.83
W
SPIKES

1355
05.86
TUMBLER
13.5
1.0
H
31
0.4
0.025
17.48
0.40
56.50
ALGOMA
1894B43B
CC
115 RE
05.83
W
SPIKES

1356
05.86
TUMBLER
13.5
1.0
L
32
0.4
0.025
-15.44
0.40
56.5
ALGOMA
2025B13D
CC
115 RE
05.83
W
SPIKES

1231
05.86
TUMBLER
12.3
1.0
L
11
0.400
0.025
16.07
-0.44
56.50
ALGOMA
2037B47
CC
115 RE
05.83
W
SPIKES

1232
05.86
TUMBLER
12.3
1.0
H
12
0.400
0.025
-16.40
-0.44
56.50
ALGOMA
2025B23A
CC
115 RE
05.83
W
SPIKES

1233
05.86
TUMBLER
12.3
1.0
H
21
0.4
0.025
14.49
-0.44
56.5
ALGOMA
2046B33A
CC
115 RE
05.83
W
SPIKES

1234
05.86
TUMBLER
12.3
1.0
H
22
0.4
0.025
-17.12
-0.44
56.5
ALGOMA
2046B25A
CC
115 RE
05.83
W
SPIKES

1235
05.86
TUMBLER
12.3
1.0
L
31
0.4
0.025
18.20
-0.50
56.50
ALGOMA
2046B14C
CC
115 RE
05.83
W
SPIKES

1236
05.86
TUMBLER
12.3
1.0
H
32
0.4
0.025
-17.07
-0.50
56.50
ALGOMA
3046B47B
CC
115 RE
05.83
W
SPIKES

6411
05.86
TUMBLER
64.1
2.0
H
11
0.5
0.025
17.20
0.58
56.562
ALGOMA
1884B47D
```

```
CC
115 RE
04.83
W
SPIKES
6412
05.86
TUMBLER
64.1
2.0
L
12
0.5
0.025
-15.30
0.58
56.562
ALGUMA
1815B41A
CC
115 RE
04.83
W
SPIKES
6413
05.86
TUMBLER
64.1
2.0
H
21
0.5
0.025
17.35
1.00
56.625
ALGUMA
1872B29C
CC
115 RE
04.83
W
SPIKES
6414
05.86
TUMBLER
64.1
2.0
L
22
0.5
0.025
-15.25
1.00
56.625
ALGUMA
1815B24D
CC
115 RE
04.83
```

```
W
SPIKES
6415
05.86
TUMBLER
64.1
2.0
H
31
0.5
0.025
16.43
0.55
56.50
ALGUMA
1884B16D
CC
115 RE
04.83
W
SPIKES
6416
05.86
TUMBLER
64.1
2.0
L
32
0.5
0.025
-15.55
0.55
56.50
ALGUMA
1815B15A
CC
115 RE
04.83
W
SPIKES
6511
05.86
TUMBLER
65.1
2.0
L
11
-0.70
0.025
16.10
-0.43
56.625
ALGUMA
4959F31D
CC
115 RE
06.83
W
SPIKES
6512
```

```
05.86
TUMBLER
65.1
2.0
H
12
-0.70
0.025
-18.10
-0.43
56.625
ALGOMA
5028F13B
CC
115 RE
06.83
W
SPIKES
6513
05.86
TUMBLER
65.1
2.0
L
21
-0.70
0.025
15.00
-0.46
56.500
ALGOMA
4959F32D
CC
115 RE
06.83
W
SPIKES
6514
05.86
TUMBLER
65.1
2.0
H
22
-0.70
0.025
-18.10
-0.46
56.500
ALGUMA
5028F111C
CC
115 RE
06.83
W
SPIKES
6515
05.86
TUMBLER
65.1
```

```
2.0
L
31
-0.70
0.025
15.6
-0.40
56.500
ALGUMA
4995F41D
CC
115 RE
06.83
W
SPIKES
6516
05.86
TUMBLER
65.1
2.0
H
32
-0.70
0.025
-16.58
-0.40
56.500
ALGOMA
5019F13D
CC
115 RE
06.83
W
SPIKES
0801
05.86
TUMBLER
08.0
3.0
H
11
0.2
0.025
16.10
1.34
56.625
ALGUMA
1763B188
CC
115 RE
04.83
W
SPIKES
0802
05.86
TUMBLER
08.0
3.0
L
12
```

```
0.2
0.025
-15.26
1.34
56.625
ALGOMA
4154F11
CC
115 RE
10.82
W
SPIKES
0803
05.86
TUMBLER
08.0
3.0
H
21
0.2
0.025
18.49
1.42
56.625
ALGOMA
1756B18A
CC
115 RE
04.83
W
SPIKES
0804
05.86
TUMBLER
08.0
3.0
L
22
0.2
0.025
-15.51
1.42
56.625
ALGOMA
4158F37A
CC
115 RE
10.82
W
SPIKES
0805
05.86
TUMBLER
08.0
3.0
H
31
0.2
0.025
18.22
1.21
56.625
ALGOMA
1872B428
CC
115 RE
04.83
W
SPIKES
0806
05.86
TUMBLER
08.0
3.0
L
32
0.2
0.025
-14.37
1.21
56.625
ALGOMA
4196F138
CC
115 RE
10.82
W
SPIKES
6721
05.86
TUMBLER
67.2
3.0
L
11
-0.10
0.25
13.7
-1.3
56.5
ALGOMA
Not/Avail
CC
115 RE
04.83
W
SPIKES
6722
05.86
TUMBLER
67.2
3.0
H
12
-0.10
0.25
-16.3
-1.3
56.5
ALGOMA
Not/Avail
CC
115 RE
04.83
W
SPIKES
6723
05.86
TUMBLER
67.2
3.0
L
21
-0.10
0.25
13.6
-1.4
56.5
ALGOMA
Not/Avail
CC
115 RE
04.83
W
SPIKES
6724
05.86
TUMBLER
67.2
3.0
H
22
-0.10
0.25
-16.4
-1.4
56.5
ALGOMA
Not/Avail
CC
115 RE
04.83
W
SPIKES
6725
05.86
TUMBLER
67.2
3.0
L
31
-0.10
0.25
13.6
-1.2
56.5
ALGOMA
Not/Avail
CC
115 RE
04.83
W
SPIKES
6726
05.86
TUMBLER
67.2
3.0
H
32
-0.10
0.25
-16.2
-1.2
56.5
ALGOMA
Not/Avail
CC
115 RE
04.83
W
SPIKES
0521
05.86
TUMBLER
05.2
3.5
H
11
0.0
0.025
18.44
2.28
56.625
ALGOMA
2029B38C
CC
115 RE
05.83
W
SPIKES
0522
05.86
TUMBLER
05.2
3.5
L
12
0.0
0.025
-13.46
2.28
56.625
ALGOMA
1875B33A
CC
115 RE
04.83
W
SPIKES
```

```
0523
05.86
TUMBLER
05.2
3.5
H
21
0.0
0.025
19.15
2.13
56.75
ALGOMA
1876B39B
CC
115 RE
05.83
W
SPIKES
0524
05.86
TUMBLER
05.2
3.5
L
22
0.0
0.025
-13.31
2.13
56.75
ALGUMA
1936B26A
CC
115 RE
05.83
W
SPIKES
0525
05.86
TUMBLER
05.2
3.5
H
31
0.0
0.025
19.27
2.21
56.625
ALGUMA
2030B19C
CC
115 RE
05.83
W
SPIKES
0526
05.86
TUMBLER
```

```
05.2
3.5
L
32
0.0
0.025
-14.10
2.21
56.625
ALGOMA
1723B44D
CC
115 RE
04.83
W
SPIKES
0711
05.86
TUMBLER
07.1
3.5
L
11
0.0
0.025
14.11
-2.35
56.625
ALGUMA
1875B19C
CC
115 RE
04.83
W
SPIKES
0712
05.86
TUMBLER
07.1
3.5
H
12
0.0
0.025
-18.41
-2.35
56.625
ALGUMA
1875B1D
CC
115 RE
04.83
W
SPIKES
0713
05.86
TUMBLER
07.1
3.5
L
```

```
21
0.0
0.025
14.20
-2.10
56.75
ALGUMA
1894B16B
CC
115 RE
04.83
W
SPIKES
0714
05.86
TUMBLER
07.1
3.5
H
22
0.0
0.025
-18.15
-2.10
56.75
ALGOMA
1887B25D
CC
115 RE
04.83
W
SPIKES
0715
05.86
TUMBLER
07.1
3.5
L
31
0.0
0.025
14.34
-2.13
56.687
ALGUMA
1945B25D
CC
115 RE
04.83
W
SPIKES
0716
05.86
TUMBLER
07.1
3.5
H
32
0.00
0.025
```

```
-18.37
-2.13
56.687
ALGOMA
Not/Avail
CC
115 RE
04.83
W
SPIKES
7121
05.86
TUMBLER
71.2
4.0
H
11
0.0
0.025
16.57
2.30
56.50
ALGOMA
CRL135522B
CC
115 RE
05.83
W
SPIKES
7122
05.86
TUMBLER
71.2
4.0
L
12
0.0
0.025
-13.46
2.30
56.50
ALGUMA
CKM484814F
CC
115 RE
03.83
W
SPIKES
7123
05.86
TUMBLER
71.2
4.0
H
21
0.0
0.025
19.26
2.33
56.625
```

```
ALGOMA
CRM484825
CC
115 RE
05.83
W
SPIKES
7124
05.86
TUMBLER
71.2
4.0
L
22
0.0
0.025
-13.57
2.33
56.625
ALGOMA
CRL135510A
CC
115 RE
05.83
W
SPIKES
7125
05.86
TUMBLER
71.2
4.0
H
31
0.0
0.025
18.39
2.23
56.825
ALGOMA
CRM485812K
CC
115 RE
05.83
W
SPIKES
7126
05.86
TUMBLER
71.2
4.0
L
32
0.0
0.025
-14.40
2.23
56.825
ALGOMA
CRM489821
CC
```

```
115 RE
05.83
W
SPIKES
0371
05.86
TUMBLER
03.7
4.0
L
11
0.2
0.025
12.55
-2.36
56.75
ALGOMA
CRL155517J
CC
115 RE
05.83
W
SPIKES
0372
05.86
TUMBLER
03.7
4.0
H
12
0.200
0.025
-18.50
-2.36
56.75
ALGOMA
CRL13104E
CC
115 RE
04.83
W
SPIKES
0373
05.86
TUMBLER
03.7
4.0
L
21
0.200
0.025
13.44
-2.30
56.75
ALGOMA
CRL13106D
CC
115 RE
04.83
W
```

```
SPIKES
0374
05.86
TUMBLER
03.7
4.0
H
22
0.200
0.025
-18.43
-2.30
56.75
ALGOMA
CRL13104K
CC
115 RE
04.83
W
SPIKES
0375
05.86
TUMBLER
03.7
4.0
L
31
0.2
0.025
14.05
-2.30
56.625
ALGOMA
CRL13557L
CC
115 RE
05.83
W
SPIKES
0376
05.86
TUMBLER
03.70
4.0
H
32
0.2
0.025
-18.39
-2.30
56.625
ALGOMA
CRL140620F
CC
115 RE
05.83
W
SPIKES
7211
05.86
```

```
TUMBLER
72.1
5.0
H
11
-0.30
0.025
20.12
3.7
56.625
ALGOMA
CRL131014K
CC
115 RE
04.83
W
SPIKES
7212
05.86
TUMBLER
72.1
5.0
L
12
-0.30
0.025
-13.36
3.7
56.625
ALGOMA
CRL13553C
CC
115 RE
05.83
W
SPIKES
7213
05.86
TUMBLER
72.1
5.0
H
21
-0.30
0.025
19.40
3.10
56.75
ALGOMA
CRM285817D
CC
115 RE
05.83
W
SPIKES
7214
05.86
TUMBLER
72.1
5.0
```

```
L
22
-0.30
0.025
-13.27
3.10
56.75
ALGOMA
CRL40520J
CC
115 RE
05.83
W
SPIKES
7215
05.86
TUMBLER
72.1
5.0
H
31
-0.30
0.025
19.31
3.00
56.625
ALGOMA
CRM489814J
CC
115 RE
05.83
W
SPIKES
7216
05.86
TUMBLER
72.1
5.0
L
32
-0.30
0.025
-13.37
3.00
56.625
ALGOMA
CRL140521C
CC
115 RE
05.83
W
SPIKES
7421
05.86
TUMBLER
74.2
5.0
L
11
0.0
0.025
13.41
-3.11
56.625
ALGOMA
CRM492518D
CC
115 RE
05.83
W
SPIKES
7422
05.86
TUMBLER
74.2
5.0
H
12
0.0
0.025
-18.54
-3.11
56.625
ALGOMA
CRL14127B
CC
115 RE
05.83
W
SPIKES
7423
05.86
TUMBLER
74.2
5.0
L
21
0.0
0.025
14.32
-1.59
56.25
ALGOMA
CRM49239K
CC
115 RE
05.83
W
SPIKES
7424
05.86
TUMBLER
74.2
5.0
H
22
0.0
0.025
-19.30
-1.59
56.25
ALGOMA
CRL14127D
CC
115 RE
05.83
W
SPIKES
7425
05.86
TUMBLER
74.2
5.0
L
31
0.0
0.025
12.43
-3.06
56.75
ALGOMA
CRM492518H
CC
115 RE
05.83
W
SPIKES
7426
05.86
TUMBLER
74.2
5.0
H
32
0.0
0.025
-19.10
-3.06
56.75
ALGOMA
CRL14127J
CC
115 RE
05.83
W
SPIKES
6101
05.86
TUMBLER
61.0
0.00
T
11
-0.30
0.025
15.49
-0.09
56.5625
ALGOMA
4160F35C
CC
115 RE
10.82
W
SPIKES
6102
05.86
TUMBLER
61.0
0.0
T
12
-0.30
0.025
-17.18
-0.09
56.5625
ALGOMA
4030123C
CC
115 RE
09.82
W
SPIKES
```

INPUT MASTER FILE -SUMMARY

RAILID	SUBDIVISION	DATE1	MILE	DEGC	LOC	GRADE	CANT	PANG	TANG	GAUGE
4991	TUMBLER	5.86	49.9	1.00	11	1.200	.0250	15.25	-.19	56.56
4992	TUMBLER	5.86	49.9	1.00	12	1.200	.0250	-17.01	-.19	56.56
4993	TUMBLER	5.86	49.9	1.00	21	1.200	.0250	15.33	-.34	56.63
4994	TUMBLER	5.86	49.9	1.00	22	1.200	.0250	-16.33	-.34	56.63
4995	TUMBLER	5.86	49.9	1.00	31	1.200	.0250	16.45	-.19	56.50
4996	TUMBLER	5.86	49.9	1.00	32	1.200	.0250	-16.48	-.19	56.50
6051	TUMBLER	5.86	60.5	1.00	11	.8000	.0250	15.49	-.33	56.50
6052	TUMBLER	5.86	60.5	1.00	12	.8000	.0250	-16.50	-.33	56.50
6053	TUMBLER	5.86	60.5	1.00	21	.8000	.0250	16.15	-.37	56.50
6054	TUMBLER	5.86	60.5	1.00	22	.8000	.0250	-17.20	-.37	56.50
6055	TUMBLER	5.86	60.5	1.00	31	.8000	.0250	15.55	-.30	56.50
6056	TUMBLER	5.86	60.5	1.00	32	.8000	.0250	-16.50	-.30	56.50
5231	TUMBLER	5.86	52.3	2.00	11	1.200	.0250	17.07	.45	56.50
5232	TUMBLER	5.86	52.3	2.00	12	1.200	.0250	-16.03	.45	56.50
5233	TUMBLER	5.86	52.3	2.00	21	1.200	.0250	16.36	.36	56.50
5234	TUMBLER	5.86	52.3	2.00	22	1.200	.0250	-16.20	.36	56.50
5235	TUMBLER	5.86	52.3	2.00	31	1.200	.0250	17.00	.43	56.50
5236	TUMBLER	5.86	52.3	2.00	32	1.200	.0250	-16.04	.43	56.50
5251	TUMBLER	5.86	52.5	2.00	11	1.200	.0250	16.04	-.18	56.63
5252	TUMBLER	5.86	52.5	2.00	12	1.200	.0250	-17.20	-.18	56.63
5253	TUMBLER	5.86	52.5	2.00	21	1.200	.0250	16.35	-.35	56.63
5254	TUMBLER	5.86	52.5	2.00	22	1.200	.0250	-16.50	-.35	56.63
5255	TUMBLER	5.86	52.5	2.00	31	1.200	.0250	15.50	-.13	56.56
5256	TUMBLER	5.86	52.5	2.00	32	1.200	.0250	-17.28	-.13	56.56
5591	TUMBLER	5.86	55.9	3.50	11	1.100	.0250	16.50	.35	56.75
5592	TUMBLER	5.86	55.9	3.50	12	1.100	.0250	-16.15	.35	56.75
5593	TUMBLER	5.86	55.9	3.50	21	1.100	.0250	16.52	.34	56.75
5594	TUMBLER	5.86	55.9	3.50	22	1.100	.0250	-16.30	.34	56.75
5595	TUMBLER	5.86	55.9	3.50	31	1.100	.0250	15.42	.24	56.63
5596	TUMBLER	5.86	55.9	3.50	32	1.100	.0250	-16.17	.24	56.63
5561	TUMBLER	5.86	55.6	3.50	11	1.100	.0250	15.36	-.31	56.63
5562	TUMBLER	5.86	55.6	3.50	12	1.100	.0250	-17.17	-.31	56.63
5563	TUMBLER	5.86	55.6	3.50	21	1.100	.0250	16.36	-.28	56.69
5564	TUMBLER	5.86	55.6	3.50	22	1.100	.0250	-16.41	-.28	56.69
5565	TUMBLER	5.86	55.6	3.50	31	1.100	.0250	16.04	-.29	56.75
5566	TUMBLER	5.86	55.6	3.50	32	1.100	.0250	-16.50	-.29	56.75
5781	TUMBLER	5.86	57.8	4.00	11	1.000	.0250	17.00	.40	56.75
5782	TUMBLER	5.86	57.8	4.00	12	1.000	.0250	-16.04	.40	56.75
5783	TUMBLER	5.86	57.8	4.00	21	1.000	.0250	16.18	.42	56.82
5784	TUMBLER	5.86	57.8	4.00	22	1.000	.0250	-15.40	.42	52.82
5785	TUMBLER	5.86	57.8	4.00	31	1.000	.0250	16.39	.41	56.75
5786	TUMBLER	5.86	57.8	4.00	32	1.000	.0250	-15.90	.41	56.75
5891	TUMBLER	5.86	58.9	4.00	11	1.000	.0250	16.33	-.25	56.69
5892	TUMBLER	5.86	58.9	4.00	12	1.000	.0250	-16.25	-.25	56.69
5893	TUMBLER	5.86	58.9	4.00	21	1.000	.0250	16.45	-.15	56.75
5894	TUMBLER	5.86	58.9	4.00	22	1.000	.0250	-17.30	-.15	56.75
5895	TUMBLER	5.86	58.9	4.00	31	1.000	.0250	15.46	-.28	56.75
5896	TUMBLER	5.86	58.9	4.00	32	1.000	.0250	-17.05	-.28	56.75
5291	TUMBLER	5.86	52.9	5.00	11	1.000	.0250	17.45	1.29	56.81
5292	TUMBLER	5.86	52.9	5.00	12	1.000	.0250	-15.34	1.29	56.81
5293	TUMBLER	5.86	52.9	5.00	21	1.000	.0250	17.55	1.32	56.75
5294	TUMBLER	5.86	52.9	5.00	22	1.000	.0250	-15.24	1.32	56.75
5295	TUMBLER	5.86	52.9	5.00	31	1.000	.0250	16.43	1.26	56.69
5296	TUMBLER	5.86	52.9	5.00	32	1.000	.0250	-15.29	1.26	56.69
5621	TUMBLER	5.86	56.2	5.00	11	1.000	.0250	15.40	-1.10	56.76
5622	TUMBLER	5.86	56.2	5.00	12	1.000	.0250	-17.44	-1.10	56.76
5623	TUMBLER	5.86	56.2	5.00	21	1.000	.0250	15.20	-.54	56.76
5624	TUMBLER	5.86	56.2	5.00	22	1.000	.0250	-16.42	-.59	56.76
5625	TUMBLER	5.86	56.2	5.00	31	1.000	.0250	15.30	-1.00	56.63

```
5626 TUMBLER        5.86 56.2 5.00  32 1.000 .0250 -17.07 -1.00  56.63
5841 TUMBLER        5.86 58.4 6.00  11 .9000 .0250  17.33  2.02  57.00
5842 TUMBLER        5.86 58.4 6.00  12 .9000 .0250 -14.55  2.02  57.00
5843 TUMBLER        5.86 58.4 6.00  21 .9000 .0250  17.51  2.14  57.00
5844 TUMBLER        5.86 58.4 6.00  22 .9000 .0250 -14.12  2.14  57.00
5845 TUMBLER        5.86 58.4 6.00  31 .9000 .0250  18.27  2.15  57.13
5846 TUMBLER        5.86 58.4 6.00  32 .9000 .0250 -13.50  2.15  57.13
5801 TUMBLER        5.86 58.0 6.00  11 1.200 .0250  14.10 -1.33  56.75
5802 TUMBLER        5.86 58.0 6.00  12 1.200 .0250 -18.10 -1.33  56.75
5803 TUMBLER        5.86 58.0 6.00  21 1.200 .0250  14.22 -1.30  56.75
5804 TUMBLER        5.86 58.0 6.00  22 1.200 .0250 -17.50 -1.30  56.75
5805 TUMBLER        5.86 58.0 6.00  31 1.200 .0250  14.21 -1.28  56.75
5806 TUMBLER        5.86 58.0 6.00  32 1.200 .0250 -18.11 -1.28  56.75
5751 TUMBLER        5.86 57.5 0.00  11 1.200 .0250  15.49  -.08  56.63
5752 TUMBLER        5.86 57.5 0.00  12 1.200 .0250 -17.10  -.08  56.63
3211 TUMBLER        5.86 32.1 1.00  11 -1.50 .0250  17.20   .31  56.50
3212 TUMBLER        5.86 32.1 1.00  12 -1.50 .0250 -15.55   .31  56.50
3213 TUMBLER        5.86 32.1 1.00  21 -1.50 .0250  17.20   .34  56.63
3214 TUMBLER        5.86 32.1 1.00  22 -1.50 .0250 -15.04   .34  56.63
3215 TUMBLER        5.86 32.1 1.00  31 -1.50 .0250  16.35   .30  56.63
3216 TUMBLER        5.86 32.1 1.00  32 -1.50 .0250 -16.56   .30  56.63
3201 TUMBLER        5.86 32.0 1.00  11 -1.50 .0250  15.40  -.45  56.63
3202 TUMBLER        5.86 32.0 1.00  12 -1.50 .0250 -17.08  -.45  56.63
3203 TUMBLER        5.86 32.0 1.00  21 -1.50 .0250  16.11  -.52  56.50
3204 TUMBLER        5.86 32.0 1.00  22 -1.50 .0250 -17.27  -.52  56.50
3205 TUMBLER        5.86 32.0 1.00  31 -1.50 .0250  16.15  -.35  56.50
3206 TUMBLER        5.86 32.0 1.00  32 -1.50 .0250 -17.12  -.35  56.50
2981 TUMBLER        5.86 29.8 2.00  11 -1.40 .0250  17.03   .40  56.50
2982 TUMBLER        5.86 29.8 2.00  12 -1.40 .0250 -15.55   .40  56.50
2983 TUMBLER        5.86 29.8 2.00  21 -1.40 .0250  16.41   .37  56.63
2984 TUMBLER        5.86 29.8 2.00  22 -1.40 .0250 -16.05   .37  56.63
2985 TUMBLER        5.86 29.8 2.00  31 -1.40 .0250  16.00   .35  56.50
2986 TUMBLER        5.86 29.8 2.00  32 -1.40 .0250 -16.38   .35  56.50
2411 TUMBLER        5.86 24.1 2.00  11 -1.40 .0250  15.49  -.45  56.75
2412 TUMBLER        5.86 24.1 2.00  12 -1.40 .0250 -16.50  -.45  56.75
2413 TUMBLER        5.86 24.1 2.00  21 -1.40 .0250  15.55  -.52  56.63
2414 TUMBLER        5.86 24.1 2.00  22 -1.40 .0250 -16.52  -.52  56.63
2415 TUMBLER        5.86 24.1 2.00  31 -1.40 .0250  16.24  -.34  56.50
2416 TUMBLER        5.86 24.1 2.00  32 -1.40 .0250 -17.10  -.34  56.50
2531 TUMBLER        5.86 25.3 3.50  11 -1.40 .0250  18.07  1.29  56.50
2532 TUMBLER        5.86 25.3 3.50  12 -1.40 .0250 -14.57  1.29  56.50
2533 TUMBLER        5.86 25.3 3.50  21 -1.40 .0250  17.23  1.18  56.50
2534 TUMBLER        5.86 25.3 3.50  22 -1.40 .0250 -16.21  1.18  56.50
2535 TUMBLER        5.86 25.3 3.50  31 -1.40 .0250  18.10  1.30  56.56
2536 TUMBLER        5.86 25.3 3.50  32 -1.40 .0250 -15.17  1.30  56.56
1781 TUMBLER        5.86 17.8 3.50  11 -1.40 .0250  14.45 -2.22  56.75
1782 TUMBLER        5.86 17.8 3.50  12 -1.40 .0250 -18.16 -2.22  56.75
1783 TUMBLER        5.86 17.8 3.50  21 -1.40 .0250  14.41 -2.16  56.50
1784 TUMBLER        5.86 17.8 3.50  22 -1.40 .0250 -18.40 -2.16  56.50
1785 TUMBLER        5.86 17.8 3.50  31 -1.40 .0250  15.12 -2.08  56.63
1786 TUMBLER        5.86 17.8 3.50  32 -1.40 .0250 -18.30 -2.08  56.63
2941 TUMBLER        5.86 29.4 4.00  11 -1.30 .0250  18.05  1.49  56.50
2942 TUMBLER        5.86 29.4 4.00  12 -1.30 .0250 -14.19  1.49  56.50
2943 TUMBLER        5.86 29.4 4.00  21 -1.30 .0250  18.12  1.57  56.63
2944 TUMBLER        5.86 29.4 4.00  22 -1.30 .0250 -14.50  1.57  56.63
2945 TUMBLER        5.86 29.4 4.00  31 -1.30 .0250  18.20  1.48  56.75
2946 TUMBLER        5.86 29.4 4.00  32 -1.30 .0250 -14.30  1.48  56.75
2911 TUMBLER        5.86 29.1 4.00  11 -1.30 .0250  15.23 -2.00  56.63
2912 TUMBLER        5.86 29.1 4.00  12 -1.30 .0250 -18.22 -2.00  56.63
2913 TUMBLER        5.86 29.1 4.00  21 -1.30 .0250  14.26 -1.53  56.63
```

```
2914 TUMBLER          5.86 29.1 4.00   22 -1.30  .0250 -18.36 -1.53   56.63
2915 TUMBLER          5.86 29.1 4.00   31 -1.30  .0250  14.11 -2.00   56.63
2916 TUMBLER          5.86 29.1 4.00   32 -1.30  .0250  17.50 -2.00   56.63
1951 TUMBLER          5.86 19.5 5.00   11 -1.30  .0250  18.37  2.18   56.75
1952 TUMBLER          5.86 19.5 5.00   12 -1.30  .0250 -13.43  2.18   56.75
1953 TUMBLER          5.86 19.5 5.00   21 -1.30  .0250  19.00  2.00   56.69
1954 TUMBLER          5.86 19.5 5.00   22 -1.30  .0250 -14.45  2.00   56.69
1955 TUMBLER          5.86 19.5 5.00   31 -1.30  .0250  18.40  2.11   56.75
1956 TUMBLER          5.86 19.5 5.00   32 -1.30  .0250 -14.30  2.11   56.75
2831 TUMBLER          5.86 28.3 6.00   11 -1.30  .0250  18.53  1.51   56.75
2832 TUMBLER          5.86 28.3 6.00   12 -1.30  .0250 -14.19  1.51   56.75
2833 TUMBLER          5.86 28.3 6.00   21 -1.30  .0250  19.29  2.38   56.75
2834 TUMBLER          5.86 28.3 6.00   22 -1.30  .0250 -14.20  2.38   56.75
2835 TUMBLER          5.86 28.3 6.00   31 -1.30  .0250  19.31  2.50   56.34
2836 TUMBLER          5.86 28.3 6.00   32 -1.30  .0250 -14.01  2.50   56.34
2811 TUMBLER          5.86 28.1 6.00   11 -1.30  .0250  13.31 -2.44   56.75
2812 TUMBLER          5.86 28.1 6.00   12 -1.30  .0250 -19.03 -2.44   56.75
2813 TUMBLER          5.86 28.1 6.00   21 -1.30  .0250  13.47 -2.52   56.75
2814 TUMBLER          5.86 28.1 6.00   22 -1.30  .0250 -19.42 -2.52   56.75
2815 TUMBLER          5.86 28.1 6.00   31 -1.30  .0250  13.30 -3.00   56.88
2816 TUMBLER          5.86 28.1 6.00   32 -1.30  .0250 -18.56 -3.00   56.88
3001 TUMBLER          5.86 30.0 0.00   11 -1.50  .0250  16.20  -.19   56.50
3002 TUMBLER          5.86 30.0 0.00   12 -1.50  .0250 -17.00  -.19   56.50
1351 TUMBLER          5.86 13.5 1.00   11 .4000  .0250  17.01   .35   56.50
1352 TUMBLER          5.86 13.5 1.00   12 .4000  .0250 -16.18   .35   56.50
1353 TUMBLER          5.86 13.5 1.00   21 .4000  .0250  17.27   .35   56.63
1354 TUMBLER          5.86 13.5 1.00   22 .4000  .0250 -16.40   .35   56.63
1355 TUMBLER          5.86 13.5 1.00   31 .4000  .0250  17.48   .40   56.50
1356 TUMBLER          5.86 13.5 1.00   32 .4000  .0250 -15.44   .40   56.50
1231 TUMBLER          5.86 12.3 1.00   11 .4000  .0250  16.07  -.44   56.50
1232 TUMBLER          5.86 12.3 1.00   12 .4000  .0250 -16.40  -.44   56.50
1233 TUMBLER          5.86 12.3 1.00   21 .4000  .0250  14.49  -.44   56.50
1234 TUMBLER          5.86 12.3 1.00   22 .4000  .0250 -17.12  -.44   56.50
1235 TUMBLER          5.86 12.3 1.00   31 .4000  .0250  18.20  -.50   56.50
1236 TUMBLER          5.86 12.3 1.00   32 .4000  .0250 -17.07  -.50   56.50
6411 TUMBLER          5.86 64.1 2.00   11 .5000  .0250  17.20   .58   56.56
6412 TUMBLER          5.86 64.1 2.00   12 .5000  .0250 -15.30   .58   56.56
6413 TUMBLER          5.86 64.1 2.00   21 .5000  .0250  17.35  1.00   56.63
6414 TUMBLER          5.86 64.1 2.00   22 .5000  .0250 -15.25  1.00   56.63
6415 TUMBLER          5.86 64.1 2.00   31 .5000  .0250  16.43   .55   56.50
6416 TUMBLER          5.86 64.1 2.00   32 .5000  .0250 -15.55   .55   56.50
6511 TUMBLER          5.86 65.1 2.00   11 -.700  .0250  16.10  -.43   56.63
6512 TUMBLER          5.86 65.1 2.00   12 -.700  .0250 -18.10  -.43   56.63
6513 TUMBLER          5.86 65.1 2.00   21 -.700  .0250  15.00  -.46   56.50
6514 TUMBLER          5.86 65.1 2.00   22 -.700  .0250 -18.10  -.46   56.50
6515 TUMBLER          5.86 65.1 2.00   31 -.700  .0250  15.60  -.40   56.50
6516 TUMBLER          5.86 65.1 2.00   32 -.700  .0250 -16.58  -.40   56.50
 801 TUMBLER          5.86  8.0 3.00   11 .2000  .0250  18.10  1.34   56.63
 802 TUMBLER          5.86  8.0 3.00   12 .2000  .0250 -15.28  1.34   56.63
 803 TUMBLER          5.86  8.0 3.00   21 .2000  .0250  18.49  1.42   56.63
 804 TUMBLER          5.86  8.0 3.00   22 .2000  .0250 -15.51  1.42   56.63
 805 TUMBLER          5.86  8.0 3.00   31 .2000  .0250  18.22  1.21   56.63
 806 TUMBLER          5.86  8.0 3.00   32 .2000  .0250 -14.37  1.21   56.63
6721 TUMBLER          5.86 67.2 3.00   11 -.100  .2500  13.70 -1.30   56.50
6722 TUMBLER          5.86 67.2 3.00   12 -.100  .2500 -16.30 -1.30   56.50
6723 TUMBLER          5.86 67.2 3.00   21 -.100  .2500  13.60 -1.40   56.50
6724 TUMBLER          5.86 67.2 3.00   22 -.100  .2500 -16.40 -1.40   56.50
6725 TUMBLER          5.86 67.2 3.00   31 -.100  .2500  13.80 -1.20   56.50
6726 TUMBLER          5.86 67.2 3.00   32 -.100  .2500 -16.20 -1.20   56.50
 521 TUMBLER          5.86  5.2 3.50   11 .0000  .0250  18.44  2.28   56.63
 522 TUMBLER        5.86  5.2 3.50  12 .0000 .0250 -13.48  2.28  56.63
 523 TUMBLER        5.86  5.2 3.50  21 .0000 .0250  19.15  2.13  56.75
 524 TUMBLER        5.86  5.2 3.50  22 .0000 .0250 -13.31  2.13  56.75
 525 TUMBLER        5.86  5.2 3.50  31 .0000 .0250  19.27  2.21  56.63
 526 TUMBLER        5.86  5.2 3.50  32 .0000 .0250 -14.10  2.21  56.63
 711 TUMBLER        5.86  7.1 3.50  11 .0000 .0250  14.11 -2.35  56.63
 712 TUMBLER        5.86  7.1 3.50  12 .0000 .0250 -18.41 -2.35  56.63
 713 TUMBLER        5.86  7.1 3.50  21 .0000 .0250  14.20 -2.10  56.75
 714 TUMBLER        5.86  7.1 3.50  22 .0000 .0250 -18.15 -2.10  56.75
 715 TUMBLER        5.86  7.1 3.50  31 .0000 .0250  14.34 -2.13  56.69
 716 TUMBLER        5.86  7.1 3.50  32 .0000 .0250 -18.37 -2.13  56.69
7121 TUMBLER        5.86 71.2 4.00  11 .0000 .0250  18.57  2.30  56.50
7122 TUMBLER        5.86 71.2 4.00  12 .0000 .0250 -13.48  2.30  56.50
7123 TUMBLER        5.86 71.2 4.00  21 .0000 .0250  19.26  2.33  56.63
7124 TUMBLER        5.86 71.2 4.00  22 .0000 .0250 -13.57  2.33  56.63
7125 TUMBLER        5.86 71.2 4.00  31 .0000 .0250  18.39  2.23  56.82
7126 TUMBLER        5.86 71.2 4.00  32 .0000 .0250 -14.40  2.23  56.82
 371 TUMBLER        5.86  3.7 4.00  11 .2000 .0250  12.55 -2.36  56.75
 372 TUMBLER        5.86  3.7 4.00  12 .2000 .0250 -18.50 -2.36  56.75
 373 TUMBLER        5.86  3.7 4.00  21 .2000 .0250  13.44 -2.30  56.75
 374 TUMBLER        5.86  3.7 4.00  22 .2000 .0250 -18.43 -2.30  56.75
 375 TUMBLER        5.86  3.7 4.00  31 .2000 .0250  14.05 -2.30  56.63
 376 TUMBLER        5.86  3.7 4.00  32 .2000 .0250 -18.39 -2.30  56.63
7211 TUMBLER        5.86 72.1 5.00  11 -.300 .0250  20.12  3.70  56.63
7212 TUMBLER        5.86 72.1 5.00  12 -.300 .0250 -13.36  3.70  56.63
7213 TUMBLER        5.86 72.1 5.00  21 -.300 .0250  19.40  3.10  56.75
7214 TUMBLER        5.86 72.1 5.00  22 -.300 .0250 -13.27  3.10  56.75
7215 TUMBLER        5.86 72.1 5.00  31 -.300 .0250  19.31  3.00  56.63
7216 TUMBLER        5.86 72.1 5.00  32 -.300 .0250 -13.37  3.00  56.63
7421 TUMBLER        5.86 74.2 5.00  11 .0000 .0250  13.41 -3.11  56.63
7422 TUMBLER        5.86 74.2 5.00  12 .0000 .0250 -18.54 -3.11  56.63
7423 TUMBLER        5.86 74.2 5.00  21 .0000 .0250  14.32 -1.59  56.25
7424 TUMBLER        5.86 74.2 5.00  22 .0000 .0250 -19.30 -1.59  56.25
7425 TUMBLER        5.86 74.2 5.00  31 .0000 .0250  12.43 -3.06  56.75
7426 TUMBLER        5.86 74.2 5.00  32 .0000 .0250 -19.10 -3.06  56.75
6101 TUMBLER        5.86 61.0 0.00  11 -.300 .0250  15.49  -.09  56.56
6102 TUMBLER        5.86 61.0 0.00  12 -.300 .0250 -17.18  -.09  56.56
1
RAILID MANUFACTURER      RAIL_STAMP         TRT   WEIGHT   MFDATE TIES   FASTNERS
  4991 ALGOMA            1942B29A           CC    115 RE     4.83  W     SPIKES
  4992 ALGOMA            4145F32A           CC    115 RE    10.82  W     SPIKES
  4993 ALGOMA            4177F2104          CC    115 RE    10.82  W     SPIKES
  4994 ALGOMA            0951B12D           CC    115 RE    10.82  W     SPIKES
  4995 ALGOMA            4177F211B          CC    115 RE    10.82  W     SPIKES
  4996 ALGOMA            4196F32B           CC    115 RE    10.82  W     SPIKES
  6051 ALGOMA            1762B29D           CC    115 RE     4.83  W     SPIKES
  6052 ALGOMA            4160F34C           CC    115 RE    10.82  W     SPIKES
  6053 ALGOMA            4155F14C           CC    115 RE    10.82  W     SPIKES
  6054 ALGOMA            4146F29B           CC    115 RE    10.82  W     SPIKES
  6055 ALGOMA            4156F38C           CC    115 RF    10.82  W     SPIKES
  6056 ALGOMA            4146F18B           CC    115 RE    10.82  W     SPIKES
  5231 ALGOMA            4178F37C           CC    115 RE    10.82  W     SPIKES
  5232 ALGOMA            0786628D           CC    115 RE     4.83  W     SPIKES
  5233 ALGOMA            4165F46B           CC    115 RE     9.82  W     SPIKES
  5234 ALGOMA            1756CB18C          CC    115 RE     4.83  W     SPIKES
  5235 ALGOMA            4178F29C           CC    115 RE    10.82  W     SPIKES
  5236 ALGOMA            1756B25B           CC    115 RE     4.83  W     SPIKES
  5251 ALGOMA            4145F37B           CC    115 RE    10.82  W     SPIKES
  5252 ALGOMA            1756D15C           CC    115 RE     4.83  W     SPIKES
  5253 ALGOMA            4137F17B           CC    115 RE    10.82  W     SPIKES
```

5254	ALGOMA	1756B15A	CC	115	RE	4.83	W	SPIKES
5255	ALGOMA	4177F17B	CC	115	RE	10.82	W	SPIKES
5256	ALGOMA	1756B46A	CC	115	RE	4.83	W	SPIKES
5591	ALGOMA	1887B16C	CC	115	RE	4.83	W	SPIKES
5592	ALGOMA	1755B31D	CC	115	RE	4.83	W	SPIKES
5593	ALGOMA	1944B19D	CC	115	RE	4.83	W	SPIKES
5594	ALGOMA	1783B11A	CC	115	RE	4.83	W	SPIKES
5595	ALGOMA	1763B111B	CC	115	RE	4.83	W	SPIKES
5596	ALGOMA	1818B42D	CC	115	RE	4.83	W	SPIKES
5561	ALGOMA	1761B42D	CC	115	RE	4.83	W	SPIKES
5562	ALGOMA	1818B21C	CC	115	RE	4.83	W	SPIKES
5563	ALGOMA	1761B42B	CC	115	RE	4.83	W	SPIKES
5564	ALGOMA	1818B21B	CC	115	RE	4.83	W	SPIKES
5565	ALGOMA	1767B411B	CC	115	RE	4.83	W	SPIKES
5566	ALGOMA	1793B11A	CC	115	RE	4.83	W	SPIKES
5781	ALGOMA	CRL41220J	CC	115	RE	5.83	W	SPIKES
5782	ALGOMA	CRL140618D	CC	115	RE	5.83	W	SPIKES
5783	ALGOMA	CRL81022C	CC	115	RE	4.83	W	SPIKES
5784	ALGOMA	CRM48105G	CC	115	RE	4.83	W	SPIKES
5785	ALGOMA	CRM481024E	CC	115	RE	4.83	W	SPIKES
5786	ALGOMA	CRM48109E	CC	115	RE	4.83	W	SPIKES
5891	ALGOMA	CRM481015C	CC	115	RE	4.83	W	SPIKES
5892	ALGOMA	CRM43744D	CC	115	RE	2.83	W	SPIKES
5893	ALGOMA	CRL481013C	CC	115	RE	4.83	W	SPIKES
5894	ALGOMA	CRM43715G	CC	115	RE	1.83	W	SPIKES
5895	ALGOMA	CRM481013F	CC	115	RE	4.83	W	SPIKES
5896	ALGOMA	CRM43712K	CC	115	RE	2.82	W	SPIKES
5291	ALGOMA	CRL104812J	CC	115	RE	4.83	W	SPIKES
5292	ALGOMA	CRL10468D	CC	115	RE	4.83	W	SPIKES
5293	ALGOMA	CRL104827D	CC	115	RE	4.83	W	SPIKES
5294	ALGOMA	CRL10465F	CC	115	RE	4.83	W	SPIKES
5295	ALGOMA	CRL104826	CC	115	RE	4.83	W	SPIKES
5296	ALGOMA	CRL10465E	CC	115	RE	4.83	W	SPIKES
5621	ALGOMA	CRL1310	CC	115	RE	4.83	W	SPIKES
5622	ALGOMA	CRL18411F	CC	115	RE	4.83	W	SPIKES
5623	ALGOMA	CRL13108B	CC	115	RE	4.83	W	SPIKES
5624	ALGOMA	CRL104115L	CC	115	RE	4.83	W	SPIKES
5625	ALGOMA	CRL13108C	CC	115	RE	4.83	W	SPIKES
5626	ALGOMA	CRL1241K	CC	115	RE	4.83	W	SPIKES
5841	ALGOMA	CRM481016C	CC	115	RE	4.83	W	SPIKES
5842	ALGOMA	CRL131010E	CC	115	RE	4.83	W	SPIKES
5843	ALGOMA	CRM431019E	CC	115	RE	4.83	W	SPIKES
5844	ALGOMA	CRL131010D	CC	115	RE	4.83	W	SPIKES
5845	ALGOMA	CRM481014F	CC	115	RE	4.83	W	SPIKES
5846	ALGOMA	CRM481017E	CC	115	RE	4.83	W	SPIKES
5801	ALGOMA	CRL141222	CC	115	RE	5.86	W	SPIKES
5802	ALGOMA	CRL141221I	CC	115	RE	5.83	W	SPIKES
5803	ALGOMA	CRM41809D	CC	115	RE	4.83	W	SPIKES
5804	ALGOMA	CRM48109F	CC	115	RE	4.83	W	SPIKES
5805	ALGOMA	CRM481026J	CC	115	RE	4.83	W	SPIKES
5806	ALGOMA	CRM48109G	CC	115	RE	4.83	W	SPIKES
5751	ALGOMA	1773B17B	CC	115	RE	4.83	W	SPIKES
5752	ALGOMA	1774B45A	CC	115	RE	4.83	W	SPIKES
3211	ALGOMA	1788B23C	CC	115	RE	5.83	W	SPIKES
3212	ALGOMA	1877D04C	CC	115	RE	5.83	W	SPIKES
3213	ALGOMA	2009B49C	CC	115	RE	5.83	W	SPIKES
3214	ALGOMA	1783B12B	CC	115	RE	4.83	W	SPIKES
3215	ALGOMA	2005B18C	CC	115	RE	5.83	W	SPIKES
3216	ALGOMA	1758B15D	CC	115	RE	4.83	W	SPIKES
3201	ALGOMA	1790B18B	CC	115	RE	4.83	W	SPIKES

3202	ALGOMA	1894B43A	CC	115 RE	5.83	W	SPIKES
3203	ALGOMA	1766B46C	CC	115 RE	4.83	W	SPIKES
3204	ALGOMA	1894B44C	CC	115 RE	5.83	W	SPIKES
3205	ALGOMA	1750B17A	CC	115 RE	4.83	W	SPIKES
3206	ALGOMA	1876B46C	CC	115 RE	5.83	W	SPIKES
2981	ALGOMA	2037B25B	CC	115 RE	5.83	W	SPIKES
2982	ALGOMA	2034B9A	CC	115 RE	5.83	W	SPIKES
2983	ALGOMA	8031B24B	CC	115 RE	5.83	W	SPIKES
2984	ALGOMA	2011B15A	CC	115 RE	5.83	W	SPIKES
2985	ALGOMA	2035B33B	CC	115 RE	5.83	W	SPIKES
2986	ALGOMA	2032B19A	CC	115 RE	5.83	W	SPIKES
2411	ALGOMA	2035B14A	CC	115 RE	4.83	W	SPIKES
2412	ALGOMA	3809B39B	CC	115 RE	5.83	W	SPIKES
2413	ALGOMA	2009B40B	CC	115 RE	5.83	W	SPIKES
2414	ALGOMA	2015B37D	CC	115 RE	5.83	W	SPIKES
2415	ALGOMA	2009B27A	CC	115 RE	5.83	W	SPIKES
2416	ALGOMA	2015B25D	CC	115 RE	5.83	W	SPIKES
2531	ALGOMA	1297B13A	CC	115 RE	4.83	W	SPIKES
2532	ALGOMA	2015B22C	CC	115 RE	5.83	W	SPIKES
2533	ALGOMA	1791B19A	CC	115 RE	4.83	W	SPIKES
2534	ALGOMA	2016B41B	CC	115 RE	5.83	W	SPIKES
2535	ALGOMA	1781B37C	CC	115 RE	4.83	W	SPIKES
2536	ALGOMA	2039B42C	CC	115 RE	5.83	W	SPIKES
1781	ALGOMA	1949B43A	CC	115 RE	4.83	W	SPIKES
1782	ALGOMA	1771B15A	CC	115 RE	4.83	W	SPIKES
1783	ALGOMA	1786B27B	CC	115 RE	4.83	W	SPIKES
1784	ALGOMA	1939B35A	CC	115 RE	4.83	W	SPIKES
1785	ALGOMA	1935B25A	CC	115 RE	4.83	W	SPIKES
1786	ALGOMA	1802B24A	CC	115 RE	5.83	W	SPIKES
2941	ALGOMA	CRL13415E	CC	115 RE	4.83	W	SPIKES
2942	ALGOMA	CRM43711H	CC	115 RE	2.83	W	SPIKES
2943	ALGOMA	CRL10415J	CC	115 RE	4.83	W	SPIKES
2944	ALGOMA	CRM437557A	CC	115 RE	1.83	W	SPIKES
2945	ALGOMA	CRL06168K	CC	115 RE	2.83	W	SPIKES
2946	ALGOMA	CRL061621C	CC	115 RE	2.83	W	SPIKES
2911	ALGOMA	CRL10411D	CC	115 RE	4.83	W	SPIKES
2912	ALGOMA	CRL10419H	CC	115 RE	4.83	W	SPIKES
2913	ALGOMA	CRL10417D	CC	115 RE	4.83	W	SPIKES
2914	ALGOMA	CLR104120A	CC	115 RE	4.83	W	SPIKES
2915	ALGOMA	CLR10418C	CC	115 RE	4.83	W	SPIKES
2916	ALGOMA	Not/Avail	CC	115 RE	4.83	W	SPIKES
1951	ALGOMA	CRM49141E	CC	115 RE	5.83	W	SPIKES
1952	ALGOMA	CRL140G20H	CC	115 RE	5.83	W	SPIKES
1953	ALGOMA	CRL140624K	CC	115 RE	5.83	W	SPIKES
1954	ALGOMA	CRL135517D	CC	115 RE	5.83	W	SPIKES
1955	ALGOMA	CRM492523A	CC	115 RE	5.83	W	SPIKES
1956	ALGOMA	CRL13552K	CC	115 RE	5.83	W	SPIKES
2831	ALGOMA	CRL135523B	CC	115 RE	5.83	W	SPIKES
2832	ALGOMA	CRL140615B	CC	115 RE	5.83	W	SPIKES
2833	ALGOMA	CRL10413F	CC	115 RE	4.83	W	SPIKES
2834	ALGOMA	CRL104116D	CC	115 RE	4.83	W	SPIKES
2835	ALGOMA	CRM43744B	CC	115 RE	2.83	W	SPIKES
2836	ALGOMA	CRL104124A	CC	115 RE	4.83	W	SPIKES
2811	ALGOMA	CRL141219J	CC	115 RE	5.83	W	SPIKES
2812	ALGOMA	CRL13101E	CC	115 RE	4.83	W	SPIKES
2813	ALGOMA	CRL35510B	CC	115 RE	5.83	W	SPIKES
2814	ALGOMA	CRL131010F	CC	115 RE	5.83	W	SPIKES
2815	ALGOMA	CRL135520F	CC	115 RE	5.83	W	SPIKES
2816	ALGOMA	CRM481026F	CC	115 RE	4.83	W	SPIKES
3001	ALGOMA	2012B22B	CC	115 RE	5.83	W	SPIKES

3002	ALGOMA	017B14A	CC	115 RE	5.83	W	SPIKES
1351	ALGOMA	1763B46D	CC	115 RE	4.83	W	SPIKES
1352	ALGOMA	2038B45B	CC	115 RE	5.83	W	SPIKES
1353	ALGOMA	1894B36A	CC	115 RE	5.83	W	SPIKES
1354	ALGOMA	2025B35C	CC	115 RE	5.83	W	SPIKES
1355	ALGOMA	1894B43B	CC	115 RE	5.83	W	SPIKES
1356	ALGOMA	2025B13D	CC	115 RE	5.83	W	SPIKES
1231	ALGOMA	2037B47	CC	115 RE	5.83	W	SPIKES
1232	ALGOMA	2025B23A	CC	115 RE	5.83	W	SPIKES
1233	ALGOMA	2046B33A	CC	115 RE	5.83	W	SPIKES
1234	ALGOMA	2046B25A	CC	115 RE	5.83	W	SPIKES
1235	ALGOMA	2046B14C	CC	115 RE	5.83	W	SPIKES
1236	ALGOMA	3046B47B	CC	115 RE	5.83	W	SPIKES
6411	ALGOMA	1884B47D	CC	115 RE	4.83	W	SPIKES
6412	ALGOMA	1815B41A	CC	115 RE	4.83	W	SPIKES
6413	ALGOMA	1872B29C	CC	115 RE	4.83	W	SPIKES
6414	ALGOMA	1815B24D	CC	115 RE	4.83	W	SPIKES
6415	ALGOMA	1884B16D	CC	115 RE	4.83	W	SPIKES
6416	ALGOMA	1815B15A	CC	115 RE	4.83	W	SPIKES
6511	ALGOMA	4959F31D	CC	115 RE	6.83	W	SPIKES
6512	ALGOMA	5028F13B	CC	115 RE	6.83	W	SPIKES
6513	ALGOMA	4959F32D	CC	115 RE	6.83	W	SPIKES
6514	ALGOMA	5028F111C	CC	115 RE	6.83	W	SPIKES
6515	ALGOMA	4995F41D	CC	115 RE	6.83	W	SPIKES
6516	ALGOMA	5019F13D	CC	115 RE	6.83	W	SPIKES
801	ALGOMA	1763B18B	CC	115 RE	4.83	W	SPIKES
802	ALGOMA	4154F11	CC	115 RE	10.82	W	SPIKES
803	ALGOMA	1756B18A	CC	115 RE	4.83	W	SPIKES
804	ALGOMA	4158F37A	CC	115 RE	10.82	W	SPIKES
805	ALGOMA	1872B42B	CC	115 RE	4.83	W	SPIKES
806	ALGOMA	4196F13B	CC	115 RE	10.82	W	SPIKES
6721	ALGOMA	Not/Avail	CC	115 RE	4.83	W	SPIKES
6722	ALGOMA	Not/Avail	CC	115 RE	4.83	W	SPIKES
6723	ALGOMA	Not/Avail	CC	115 RE	4.83	W	SPIKES
6724	ALGOMA	Not/Avail	CC	115 RE	4.83	W	SPIKES
6725	ALGOMA	Not/Avail	CC	115 RE	4.83	W	SPIKES
6726	ALGOMA	Not/Avail	CC	115 RE	4.83	W	SPIKES
521	ALGOMA	2029B38C	CC	115 RE	5.83	W	SPIKES
522	ALGOMA	1875B33A	CC	115 RE	4.83	W	SPIKES
523	ALGOMA	1878B39B	CC	115 RE	5.83	W	SPIKES
524	ALGOMA	1936B26A	CC	115 RE	5.83	W	SPIKES
525	ALGOMA	2030B19C	CC	115 RE	5.83	W	SPIKES
526	ALGOMA	1723B44D	CC	115 RE	4.83	W	SPIKES
711	ALGOMA	1875B19C	CC	115 RE	4.83	W	SPIKES
712	ALGOMA	1875B1D	CC	115 RE	4.83	W	SPIKES
713	ALGOMA	1894B16B	CC	115 RE	4.83	W	SPIKES
714	ALGOMA	1887B25D	CC	115 RE	4.83	W	SPIKES
715	ALGOMA	1945B25D	CC	115 RE	4.83	W	SPIKES
716	ALGOMA	Not/Avail	CC	115 RE	4.83	W	SPIKES
7121	ALGOMA	CRL135522B	CC	115 RE	5.83	W	SPIKES
7122	ALGOMA	CRM489814F	CC	115 RE	3.83	W	SPIKES
7123	ALGOMA	CRM489825	CC	115 RE	5.83	W	SPIKES
7124	ALGOMA	CRL135510A	CC	115 RE	5.83	W	SPIKES
7125	ALGOMA	CRM485812K	CC	115 RE	5.83	W	SPIKES
7126	ALGOMA	CRM489821	CC	115 RE	5.83	W	SPIKES
371	ALGOMA	CRL155S17J	CC	115 RE	5.83	W	SPIKES
372	ALGOMA	CRL13104E	CC	115 RE	4.83	W	SPIKES
373	ALGOMA	CRL13106D	CC	115 RE	4.83	W	SPIKES
374	ALGOMA	CRL13104K	CC	115 RE	4.83	W	SPIKES
375	ALGOMA	CRL13557L	CC	115 RE	5.83	W	SPIKES

376	ALGOMA	CRL140620F	CC	115 RE	5.83	W	SPIKES
7211	ALGOMA	CRL131014K	CC	115 RE	4.83	W	SPIKES
7212	ALGOMA	CRL13553C	CC	115 RE	5.83	W	SPIKES
7213	ALGOMA	CRM285817D	CC	115 RE	5.83	W	SPIKES
7214	ALGOMA	CRL40520J	CC	115 RE	5.83	W	SPIKES
7215	ALGOMA	CRM489814J	CC	115 RE	5.83	W	SPIKES
7216	ALGOMA	CRL140521C	CC	115 RE	5.83	W	SPIKES
7421	ALGOMA	CRM492518D	CC	115 RE	5.83	W	SPIKES
7422	ALGOMA	CRL14127B	CC	115 RE	5.83	W	SPIKES
7423	ALGOMA	CRM49239K	CC	115 RE	5.83	W	SPIKES
7424	ALGOMA	CRL14127D	CC	115 RE	5.83	W	SPIKES
7425	ALGOMA	CRM492518H	CC	115 RE	5.83	W	SPIKES
7426	ALGOMA	CRL14127J	CC	115 RE	5.83	W	SPIKES
6101	ALGOMA	4160F35C	CC	115 RE	10.82	W	SPIKES
6102	ALGOMA	4030123C	CC	115 RE	9.82	W	SPIKES

TONNAGE EVALUATIONS

File : BCTRAIN.WK1
Disk : BC Rail Data
Date : 24-Nov-88

Table 1: BC Rail - Rail Wear Measurements - Tumbler Sub

Summary of Monthly Coal Train Traffic
Number of Trains in One Direction Only

Period Ending		Total Trains per Year	Trains to/from Quintette Mine	Trains to/from Teck Mine	
Oct 85		79	55	24	
Nov		66	45	21	
Dec		62	45	17	
Jan 86		65	45	20	
Feb		61	42	19	
Mar		66	49	17	
Apr		68	52	16	
May	----------	70	54	16	-----------Rail Profile Reading No.1
Jun		67	53	14	
Jul		71	56	15	
Aug		77	59	18	
Sep	----------	55	39	16	-----------Rail Profile Reading No.2
Oct		61	45	16	
Nov		60	46	14	
Dec		61	45	16	
Jan 87		62	47	15	
Feb		55	41	14	
Mar		53	38	15	
Apr		55	40	15	
May	----------	59	42	17	-----------Rail Profile Reading No.3
Jun		58	42	16	
Jul		37	20	17	
Aug		50	34	16	
Sep	----------	65	49	16	-----------Rail Profile Reading No.4
Oct		66	52	14	
Nov		63	47	16	
Dec		56	36	20	
Jan 88		58	43	15	
Feb		58	41	17	
Mar		68	51	17	
Apr		58	43	15	
May	----------	57	41	16	-----------Rail Profile Reading No.5
Jun		64	49	15	
Jul		47	28	19	
Aug		55	40	15	
Sep	----------				-----------Rail Profile Reading No.6
Total		2133	1554	579	

N.B. : Rail profile measurement taken at the beginning of the period shown

Data

All Trains

No. cars	98
No. caboose	1
No. electric units	2
No. helper engines	2

Car Weights

Engine	178.70 Tons	
Caboose	36.00 Tons	
Tare		
BCNE cars	25.50 Tons	62 % of cars
CN cars	26.00 Tons	38 % of cars
Gross		
Average car	118.05 Tons	

Rail Sections

Mile 3.7 to Mile 32.1 (Total traffic, 2 electric units, 1 caboose)

Tare	Average Train	2911.02 Tons	
Gross	Average Train	11962.3 Tons	
	Average consist	11568.9 Tons	(excludes engines and caboose)

Mile 49.9 to Mile 67.2 (Total traffic, 2 electric units, 2 helper units, 1 caboose)

Tare	Average Train	3268.42 Tons	
Gross	Average Train	12319.7 Tons	
	Average consist	11568.9 Tons	(excludes engines and caboose)

Mile 71.2 to Mile 74.2 (Quintette traffic, 2 electric units, 2 helper units, 1 caboose)

Tare	Average Train	3268.42 Tons	
Gross	Average Train	12319.7 Tons	
	Average consist	11568.9 Tons	(excludes engines and caboose)

Table 2: BC Rail - Rail Wear Measurements - Tumbler Sub

Summary of Monthly Cummulative Tonnage (tons)

Period Ending		Mile 3.7 to 32.1			Mile 49.9 to 67.2			Mile 71.2 to 74.2			
		tare	gross	total	tare	gross	total	tare	gross	total	
Oct 85		2.30E+05	9.45E+05	1.17E+06	2.50E+05	9.73E+05	1.23E+06	1.88E+05	6.70E+05	8.57E+05	
Nov		4.22E+05	1.73E+06	2.15E+06	4.74E+05	1.79E+06	2.26E+06	3.27E+05	1.23E+06	1.56E+06	
Dec		6.03E+05	2.48E+06	3.08E+06	6.77E+05	2.55E+06	3.23E+06	4.74E+05	1.79E+06	2.26E+06	
Jan 86		7.92E+05	3.25E+06	4.05E+06	8.89E+05	3.35E+06	4.24E+06	6.21E+05	2.34E+06	2.96E+06	
Feb		9.69E+05	3.98E+06	4.95E+06	1.09E+06	4.10E+06	5.19E+06	7.58E+05	2.86E+06	3.62E+06	
Mar		1.16E+06	4.77E+06	5.93E+06	1.30E+06	4.92E+06	6.22E+06	9.18E+05	3.46E+06	4.38E+06	
Apr		1.36E+06	5.59E+06	6.95E+06	1.53E+06	5.75E+06	7.28E+06	1.09E+06	4.10E+06	5.19E+06	
May	---	1.56E+06	6.42E+06	7.98E+06	1.76E+06	6.62E+06	8.37E+06	1.26E+06	4.77E+06	6.03E+06	---Rail Profile Reading No.1
Jun		1.76E+06	7.23E+06	8.99E+06	1.97E+06	7.44E+06	9.42E+06	1.44E+06	5.42E+06	6.86E+06	
Jul		1.96E+06	8.07E+06	1.00E+07	2.21E+06	8.32E+06	1.05E+07	1.62E+06	6.11E+06	7.73E+06	
Aug		2.19E+06	9.00E+06	1.12E+07	2.46E+06	9.26E+06	1.17E+07	1.81E+06	6.84E+06	8.65E+06	
Sep	---	2.35E+06	9.65E+06	1.20E+07	2.66E+06	9.94E+06	1.26E+07	1.94E+06	7.32E+06	9.26E+06	---Rail Profile Reading No.2
Oct		2.53E+06	1.04E+07	1.29E+07	2.86E+06	1.07E+07	1.35E+07	2.09E+06	7.87E+06	9.96E+06	
Nov		2.70E+06	1.11E+07	1.38E+07	3.03E+06	1.14E+07	1.45E+07	2.26E+06	8.44E+06	1.07E+07	
Dec		2.88E+06	1.18E+07	1.47E+07	3.23E+06	1.22E+07	1.54E+07	2.39E+06	8.99E+06	1.14E+07	
Jan 87		3.06E+06	1.26E+07	1.56E+07	3.44E+06	1.29E+07	1.64E+07	2.56E+06	9.57E+06	1.21E+07	
Feb		3.22E+06	1.32E+07	1.64E+07	3.61E+06	1.36E+07	1.72E+07	2.67E+06	1.01E+07	1.28E+07	
Mar		3.37E+06	1.39E+07	1.72E+07	3.79E+06	1.43E+07	1.81E+07	2.80E+06	1.05E+07	1.33E+07	
Apr		3.53E+06	1.45E+07	1.81E+07	3.97E+06	1.50E+07	1.89E+07	2.93E+06	1.10E+07	1.40E+07	
May	---	3.71E+06	1.52E+07	1.89E+07	4.16E+06	1.57E+07	1.98E+07	3.07E+06	1.16E+07	1.46E+07	---Rail Profile Reading No.3
Jun		3.87E+06	1.59E+07	1.98E+07	4.35E+06	1.64E+07	2.07E+07	3.20E+06	1.21E+07	1.53E+07	
Jul		3.98E+06	1.64E+07	2.03E+07	4.47E+06	1.69E+07	2.13E+07	3.27E+06	1.23E+07	1.56E+07	
Aug		4.13E+06	1.70E+07	2.11E+07	4.63E+06	1.75E+07	2.21E+07	3.38E+06	1.27E+07	1.61E+07	
Sep	---	4.32E+06	1.77E+07	2.21E+07	4.85E+06	1.83E+07	2.31E+07	3.54E+06	1.33E+07	1.69E+07	---Rail Profile Reading No.4
Oct		4.51E+06	1.85E+07	2.30E+07	5.06E+06	1.91E+07	2.41E+07	3.71E+06	1.40E+07	1.77E+07	
Nov		4.69E+06	1.93E+07	2.40E+07	5.27E+06	1.99E+07	2.51E+07	3.88E+06	1.46E+07	1.84E+07	
Dec		4.86E+06	2.00E+07	2.48E+07	5.45E+06	2.05E+07	2.60E+07	3.98E+06	1.50E+07	1.90E+07	
Jan 88		5.02E+06	2.06E+07	2.57E+07	5.64E+06	2.13E+07	2.69E+07	4.12E+06	1.55E+07	1.97E+07	
Feb		5.19E+06	2.13E+07	2.65E+07	5.83E+06	2.20E+07	2.78E+07	4.26E+06	1.60E+07	2.03E+07	
Mar		5.38E+06	2.22E+07	2.75E+07	6.05E+06	2.28E+07	2.89E+07	4.42E+06	1.67E+07	2.11E+07	
Apr		5.56E+06	2.28E+07	2.84E+07	6.24E+06	2.35E+07	2.98E+07	4.56E+06	1.72E+07	2.18E+07	
May	---	5.73E+06	2.35E+07	2.93E+07	6.43E+06	2.42E+07	3.07E+07	4.70E+06	1.77E+07	2.24E+07	---Rail Profile Reading No.5
Jun		5.91E+06	2.43E+07	3.02E+07	6.64E+06	2.50E+07	3.17E+07	4.86E+06	1.83E+07	2.32E+07	
Jul		6.05E+06	2.48E+07	3.09E+07	6.79E+06	2.56E+07	3.24E+07	4.95E+06	1.87E+07	2.36E+07	
Aug		6.21E+06	2.55E+07	3.17E+07	6.97E+06	2.63E+07	3.32E+07	5.08E+06	1.91E+07	2.42E+07	
Sep	---										---Rail Profile Reading No.6
Total		6.21E+06	2.55E+07	3.17E+07	6.97E+06	2.63E+07	3.32E+07	5.08E+06	1.91E+07	2.42E+07	

FILE: TUMBAREA.PRN
DATE: DEC 5, 1988

Wear Parameter for Wear Plots

RAILID	DATE	POS	H/L I/O	DG_CUR	TOP_CHNG (in)	AREA_T_CHNG (in²)	GAGE_CHNG (in)	AREA_G_CHNG (in²)	TON (Tons)
4991	9.86	1	0	1.00	.67897D-02	.29954D-01	.30133D-01	.47050D-01	.11720D+08
4991	9.87	1	0	1.00	.33662D-01	.66896D-01	-.92379D-02	.35402D-01	.22100D+08
4991	5.88	1	0	1.00	.72845D-01	.15696D+00	-.31404D-01	.28702D-01	.29770D+08
4991	9.88	1	0	1.00	.71817D-01	.15341D+00	-.72738D-01	-.27243D-01	.33250D+08
4992	9.86	2	1	1.00	-.98087D-02	.12902D-01	.16553D-01	.53839D-01	.11720D+08
4992	9.87	2	1	1.00	.37115D-01	.80436D-01	-.32075D-01	-.63989D-02	.22100D+08
4992	5.88	2	1	1.00	.83179D-01	.17553D+00	-.26214D-03	.61092D-01	.29770D+08
4992	9.88	2	1	1.00	.83287D-01	.16877D+00	-.20864D-01	.30671D-01	.33250D+08
4993	9.86	3	0	1.00	.14785D-01	.30477D-01	.11443D-01	.50556D-01	.11720D+08
4993	9.87	3	0	1.00	.40938D-01	.78790D-01	.15214D-01	.41236D-01	.22100D+08
4993	5.88	3	0	1.00	.81724D-01	.15866D+00	.27953D-01	.78392D-01	.29770D+08
4993	9.88	3	0	1.00	.73998D-01	.15094D+00	-.29851D-01	.25466D-01	.33250D+08
4994	9.86	4	1	1.00	.82700D-02	.27499D-01	.21889D-01	.35869D-01	.11720D+08
4994	9.87	4	1	1.00	.41872D-01	.91840D-01	-.12180D-01	.12143D-01	.22100D+08
4994	5.88	4	1	1.00	.77249D-01	.16311D+00	.67627D-02	.62024D-01	.29770D+08
4994	9.88	4	1	1.00	.75196D-01	.16167D+00	-.13700D-01	.19341D-01	.33250D+08
4995	9.86	5	0	1.00	.98840D-02	.54430D-01	-.43473D-01	-.39713D-01	.11720D+08
4995	9.87	5	0	1.00	.35447D-01	.77951D-01	-.53643D-01	-.11965D-01	.22100D+08
4995	5.88	5	0	1.00	.77447D-01	.16101D+00	-.43601D-01	.19361D-01	.29770D+08
4995	9.88	5	0	1.00	.64956D-01	.13383D+00	-.11024D+00	-.64086D-01	.33250D+08
4996	9.86	6	1	1.00	.83157D-02	.31953D-01	-.23321D-01	-.12386D-01	.11720D+08
4996	9.87	6	1	1.00	.35854D-01	.76078D-01	-.27364D-01	.10939D-01	.22100D+08
4996	5.88	6	1	1.00	.68888D-01	.15302D+00	-.76405D-02	.52743D-01	.29770D+08
4996	9.88	6	1	1.00	.67060D-01	.14572D+00	-.26304D-01	.49373D-02	.33250D+08
6051	9.86	1	0	1.00	.34626D-01	.89734D-01	.54765D-03	.27159D-01	.11720D+08
6051	9.87	1	0	1.00	.55330D-01	.12003D+00	.70224D-02	.35768D-01	.22100D+08
6051	5.88	1	0	1.00	.81471D-01	.18255D+00	-.28151D-01	.17036D-01	.29770D+08
6051	9.88	1	0	1.00	.76668D-01	.18785D+00	-.66817D-01	-.24652D-01	.33250D+08
6052	9.86	2	1	1.00	.34808D-01	.92916D-01	-.20102D-01	.14231D-02	.11720D+08
6052	9.87	2	1	1.00	.59161D-01	.12788D+00	-.38493D-01	-.10731D-02	.22100D+08
6052	5.88	2	1	1.00	.93366D-01	.19141D+00	-.25036D-01	.28394D-01	.29770D+08
6052	9.88	2	1	1.00	.85011D-01	.17856D+00	-.43562D-01	-.12333D-01	.33250D+08
6053	9.86	3	0	1.00	.27574D-01	.76771D-01	-.11230D-01	.94128D-03	.11720D+08
6053	9.87	3	0	1.00	.47322D-01	.98866D-01	-.63241D-02	.19463D-01	.22100D+08
6053	5.88	3	0	1.00	.66261D-01	.14268D+00	-.13418D-01	.26276D-01	.29770D+08
6053	9.88	3	0	1.00	.64356D-01	.14192D+00	-.37539D-01	-.95062D-02	.33250D+08
6054	9.86	4	1	1.00	.40223D-01	.10365D+00	-.55983D-02	.61321D-03	.11720D+08
6054	9.87	4	1	1.00	.72005D-01	.14522D+00	-.82111D-02	.32027D-01	.22100D+08
6054	5.88	4	1	1.00	.10228D+00	.20326D+00	-.24621D-01	.25722D-01	.29770D+08
6054	9.88	4	1	1.00	.95340D-01	.19454D+00	-.44725D-01	-.44060D-02	.33250D+08
6055	9.86	5	0	1.00	.24741D-01	.72351D-01	.54429D-02	.35251D-01	.11720D+08
6055	9.87	5	0	1.00	.27561D-01	.74451D-01	-.46287D-01	-.44332D-01	.22100D+08
6055	5.88	5	0	1.00	.66690D-01	.15289D+00	-.44672D-01	.16239D-01	.29770D+08
6055	9.88	5	0	1.00	.53737D-01	.13549D+00	-.11004D+00	-.77884D-01	.33250D+08
6056	9.86	6	1	1.00	.33462D-01	.83084D-01	.26150D-02	.30090D-01	.11720D+08
6056	9.87	6	1	1.00	.63672D-01	.12697D+00	.28769D-01	.76885D-01	.22100D+08
6056	5.88	6	1	1.00	.93947D-01	.18104D+00	.36921D-01	.10522D+00	.29770D+08
6056	9.88	6	1	1.00	.90546D-01	.17955D+00	-.45733D-02	.50665D-01	.33250D+08
5231	9.86	1	1	2.00	.12773D-01	.59374D-01	.61163D-02	.38597D-01	.11720D+08
5231	9.87	1	1	2.00	.49919D-01	.19788D+00	.19856D-01	.66434D-01	.22100D+08

```
5231  5.88  1  1  2.00   .78869D-01   .24247D+00   .32469D-01   .10581D+00   .29770D+08
5231  9.88  1  1  2.00   .78371D-01   .16892D+00   .52885D-01   .94062D-01   .33250D+08
5232  9.86  2  0  2.00  -.15600D-01   .35882D-02  -.10311D-01   .35955D-01   .11720D+08
5232  9.87  2  0  2.00   .44296D-01   .10239D+00  -.62688D-01  -.51553D-02   .22100D+08
5232  5.88  2  0  2.00   .71800D-01   .16437D+00  -.66614D-01   .10242D-01   .29770D+08
5232  9.88  2  0  2.00   .66323D-01   .15683D+00  -.11764D+00  -.60216D-01   .33250D+08
5233  9.86  3  1  2.00   .12203D-01   .57241D-01  -.21118D-01  -.79246D-02   .11720D+08
5233  9.87  3  1  2.00   .52810D-01   .10994D+00  -.71501D-02   .22581D-01   .22100D+08
5233  5.88  3  1  2.00   .86705D-01   .17301D+00  -.14645D-01   .45331D-01   .29770D+08
5233  9.88  3  1  2.00   .75372D-01   .15020D+00   .77574D-02   .34862D-01   .33250D+08
5234  9.86  4  0  2.00   .62570D-02   .51174D-01  -.15641D-01  -.21383D-01   .11720D+08
5234  9.87  4  0  2.00   .50589D-01   .11476D+00  -.45685D-02   .98989D-02   .22100D+08
5234  5.88  4  0  2.00   .80817D-01   .17344D+00  -.28162D-02   .42672D-01   .29770D+08
5234  9.88  4  0  2.00   .48851D-01   .10042D+00   .32575D-02   .57832D-01   .33250D+08
5235  9.86  5  1  2.00   .18481D-01   .73818D-01  -.17220D-01   .39437D-02   .11720D+08
5235  9.87  5  1  2.00   .53035D-01   .11402D+00   .42088D-02   .45126D-01   .22100D+08
5235  5.88  5  1  2.00   .87370D-01   .17553D+00   .75290D-02   .85080D-01   .29770D+08
5235  9.88  5  1  2.00   .75744D-01   .14726D+00   .24949D-01   .69118D-01   .33250D+08
5236  9.86  6  0  2.00   .14352D-01   .69603D-01   .78584D-02   .16635D-01   .11720D+08
5236  9.87  6  0  2.00   .51348D-01   .11742D+00  -.30967D-01   .71287D-02   .22100D+08
5236  5.88  6  0  2.00   .80014D-01   .17870D+00  -.62599D-01  -.72191D-02   .29770D+08
5236  9.88  6  0  2.00   .77438D-01   .17482D+00  -.97922D-01  -.51425D-01   .33250D+08
5251  9.86  1  0  2.00   .14274D-01   .43914D-01  -.10527D-01   .72372D-02   .11720D+08
5251  9.87  1  0  2.00   .57554D-01   .11183D+00   .90373D-02   .55846D-01   .22100D+08
5251  5.88  1  0  2.00   .97334D-01   .19042D+00  -.15882D-01   .58384D-01   .29770D+08
5251  9.88  1  0  2.00   .92069D-01   .17794D+00  -.51974D-01   .11275D-01   .33250D+08
5252  9.86  2  1  2.00   .21211D-01   .71120D-01  -.20195D-01  -.19448D-01   .11720D+08
5252  9.87  2  1  2.00   .82333D-01   .16554D+00  -.41416D-01   .78316D-02   .22100D+08
5252  5.88  2  1  2.00   .12158D+00   .23525D+00  -.38455D-01   .33307D-01   .29770D+08
5252  9.88  2  1  2.00   .12109D+00   .23476D+00  -.64332D-01   .13774D-01   .33250D+08
5253  9.86  3  0  2.00   .16413D-01   .51654D-01   .10026D-01   .33041D-01   .11720D+08
5253  9.87  3  0  2.00   .55131D-01   .11385D+00  -.18001D-01   .18869D-01   .22100D+08
5253  5.88  3  0  2.00   .93404D-01   .17045D+00  -.24447D-01   .38676D-01   .29770D+08
5253  9.88  3  0  2.00   .95949D-01   .18144D+00  -.60009D-01   .31447D-02   .33250D+08
5254  9.86  4  1  2.00   .18817D-01   .56257D-01  -.75889D-03   .13204D-01   .11720D+08
5254  9.87  4  1  2.00   .75159D-01   .17069D+00   .23442D-01   .85718D-01   .22100D+08
5254  5.88  4  1  2.00   .11122D+00   .22754D+00   .97594D-02   .98735D-01   .29770D+08
5254  9.88  4  1  2.00   .11564D+00   .27434D+00  -.15574D-01   .69773D-01   .33250D+08
5255  9.86  5  0  2.00   .13576D-01   .51914D-01   .29283D-01   .46191D-01   .11720D+08
5255  9.87  5  0  2.00   .53246D-01   .11994D+00  -.42246D-01  -.67394D-02   .22100D+08
5255  5.88  5  0  2.00   .90827D-01   .17826D+00  -.40394D-01   .26453D-01   .29770D+08
5255  9.88  5  0  2.00   .80298D-01   .17864D+00  -.79679D-01  -.20216D-01   .33250D+08
5256  9.86  6  1  2.00   .20785D-01   .73554D-01  -.14695D-01  -.24209D-01   .11720D+08
5256  9.87  6  1  2.00   .67771D-01   .14938D+00  -.31096D-01  -.25191D-02   .22100D+08
5256  5.88  6  1  2.00   .10675D+00   .21126D+00  -.23372D-01   .20763D-01   .29770D+08
5256  9.88  6  1  2.00   .10768D+00   .21534D+00  -.41191D-01   .45311D-02   .33250D+08
5591  9.86  1  1  3.50   .42872D-01   .96486D-01   .15805D-01   .61399D-01   .11720D+08
5591  9.87  1  1  3.50   .90530D-01   .17078D+00   .19576D-01   .10392D+00   .22100D+08
5591  5.88  1  1  3.50   .11789D+00   .22743D+00   .24080D-01   .14100D+00   .29770D+08
5591  9.88  1  1  3.50   .10999D+00   .21472D+00  -.27339D-01   .62753D-01   .33250D+08
5592  9.86  2  0  3.50   .40667D-01   .11068D+00   .68903D-02   .16462D-01   .11720D+08
5592  9.87  2  0  3.50   .98695D-01   .22072D+00  -.31433D-01   .18633D-01   .22100D+08
5592  5.88  2  0  3.50   .15776D+00   .34435D+00  -.66350D-01   .15227D-01   .29770D+08
5592  9.88  2  0  3.50   .15845D+00   .35792D+00  -.14041D+00  -.96870D-01   .33250D+08
5593  9.86  3  1  3.50   .38469D-01   .10059D+00  -.60198D-02   .20000D-01   .11720D+08
5593  9.87  3  1  3.50   .93279D-01   .18160D+00  -.42024D-01   .16299D-01   .22100D+08
5593  5.88  3  1  3.50   .12140D+00   .22865D+00  -.26691D-01   .80624D-01   .29770D+08
5593  9.88  3  1  3.50   .11803D+00   .22598D+00  -.65372D-01   .30517D-01   .33250D+08
5594  9.86  4  0  3.50   .42258D-01   .10784D+00  -.11832D-01  -.80771D-02   .11720D+08
5594  9.87  4  0  3.50   .10046D+00   .23871D+00  -.33676D-01   .11008D-01   .22100D+08
```

```
5594  5.88   4   0  3.50  .14774D+00   .33688D+00 -.42944D-01   .27704D-01   .29770D+08
5594  9.88   4   0  3.50  .16061D+00   .36315D+00 -.90570D-01  -.32331D-01   .33250D+08
5595  9.86   5   1  3.50  .30830D-01   .90446D-01  .20294D-01   .62955D-01   .11720D+08
5595  9.87   5   1  3.50  .91213D-01   .18045D+00 -.28441D-01   .35245D-01   .22100D+08
5595  5.88   5   1  3.50  .12302D+00   .24387D+00 -.27609D-01   .74659D-01   .29770D+08
5595  9.88   5   1  3.50  .12074D+00   .23639D+00 -.71558D-01   .15048D-01   .33250D+08
5596  9.86   6   0  3.50  .33486D-01   .10478D+00 -.13071D-01   .75133D-02   .11720D+08
5596  9.87   6   0  3.50  .67219D-01   .14820D+00 -.27484D-01   .15025D-01   .22100D+08
5596  5.88   6   0  3.50  .12284D+00   .26165D+00 -.57862D-01  -.21694D-02   .29770D+08
5596  9.88   6   0  3.50  .12729D+00   .27011D+00 -.10599D+00  -.62104D-01   .33250D+08
5561  9.86   1   0  3.50  .27579D-01   .80297D-01 -.98519D-02   .28361D-01   .11720D+08
5561  9.87   1   0  3.50  .90540D-01   .20521D+00 -.44460D-01   .18179D-01   .22100D+08
5561  5.88   1   0  3.50  .14378D+00   .30823D+00 -.43930D-01   .49525D-01   .29770D+08
5561  9.88   1   0  3.50  .14916D+00   .33147D+00 -.10194D+00  -.22511D-01   .33250D+08
5562  9.86   2   1  3.50  .38805D-01   .10158D+00 -.18587D-01   .37415D-02   .11720D+08
5562  9.87   2   1  3.50  .13653D+00   .23675D+00  .94635D-02   .12460D+00   .22100D+08
5562  5.88   2   1  3.50  .17226D+00   .30170D+00 -.20536D-01   .13070D+00   .29770D+08
5562  9.88   2   1  3.50  .15893D+00   .27248D+00 -.16437D-01   .13343D+00   .33250D+08
5563  9.86   3   0  3.50  .25698D-01   .81168D-01 -.14939D-01   .32881D-01   .11720D+08
5563  9.87   3   0  3.50  .99604D-01   .20745D+00 -.48578D-01   .36640D-01   .22100D+08
5563  5.88   3   0  3.50  .15728D+00   .32903D+00 -.87294D-01   .14687D-01   .29770D+08
5563  9.88   3   0  3.50  .15709D+00   .32358D+00 -.74272D-01   .38120D-01   .33250D+08
5564  9.86   4   1  3.50  .37767D-01   .10510D+00 -.16476D-01   .87082D-02   .11720D+08
5564  9.87   4   1  3.50  .13542D+00   .23606D+00 -.23592D-01   .80607D-01   .22100D+08
5564  5.88   4   1  3.50  .16996D+00   .29165D+00 -.23847D-01   .12775D+00   .29770D+08
5564  9.88   4   1  3.50  .16085D+00   .27631D+00 -.46055D-01   .10185D+00   .33250D+08
5565  9.86   5   0  3.50  .53553D-01   .13588D+00  .19906D-02   .26813D-01   .11720D+08
5565  9.87   5   0  3.50  .10013D+00   .20663D+00 -.30720D-01   .35375D-01   .22100D+08
5565  5.88   5   0  3.50  .14283D+00   .28282D+00 -.15794D-01   .88653D-01   .29770D+08
5565  9.88   5   0  3.50  .14900D+00   .31778D+00 -.10349D+00  -.32466D-01   .33250D+08
5566  9.86   6   1  3.50  .39674D-01   .10894D+00  .80628D-02   .56993D-01   .11720D+08
5566  9.87   6   1  3.50  .12865D+00   .24189D+00 -.17017D-01   .91282D-01   .22100D+08
5566  5.88   6   1  3.50  .16110D+00   .28787D+00 -.15612D-02   .16266D+00   .29770D+08
5566  9.88   6   1  3.50  .16084D+00   .29405D+00 -.35699D-01   .13979D+00   .33250D+08
5781  9.86   1   1  4.00  .31898D-01   .61203D-01  .10487D-01   .54304D-01   .11720D+08
5781  9.87   1   1  4.00  .36113D-01   .72420D-01 -.26468D-01  -.14315D-01   .22100D+08
5781  5.88   1   1  4.00  .77391D-01   .11026D+00  .29290D-01   .95997D-01   .29770D+08
5781  9.88   1   1  4.00  .69983D-01   .13062D+00 -.18096D-01   .33954D-01   .33250D+08
5782  9.86   2   0  4.00  .21962D-01   .72577D-01  .17026D-01   .40902D-01   .11720D+08
5782  9.87   2   0  4.00  .41311D-01   .91865D-01  .11718D-01   .33031D-01   .22100D+08
5782  5.88   2   0  4.00  .72511D-01   .14258D+00  .28519D-01   .61903D-01   .29770D+08
5782  9.88   2   0  4.00  .64295D-01   .14333D+00 -.35976D-01  -.33592D-01   .33250D+08
5783  9.86   3   1  4.00  .32789D-01   .67800D-01  .41926D-02   .29859D-01   .11720D+08
5783  9.87   3   1  4.00  .49402D-01   .93250D-01  .35546D-02   .42663D-01   .22100D+08
5783  5.88   3   1  4.00  .82577D-01   .15034D+00  .12567D-01   .80207D-01   .29770D+08
5783  9.88   3   1  4.00  .78377D-01   .14904D+00 -.18038D-01   .36688D-01   .33250D+08
5784  9.86   4   0  4.00  .15031D-01   .79554D-01 -.57960D-02  -.89698D-02   .11720D+08
5784  9.87   4   0  4.00  .44514D-01   .96890D-01  .20263D-01   .41965D-01   .22100D+08
5784  5.88   4   0  4.00  .82185D-01   .16375D+00  .31643D-01   .67700D-01   .29770D+08
5784  9.88   4   0  4.00  .76405D-01   .15801D+00 -.14345D-01   .44584D-02   .33250D+08
5785  9.86   5   1  4.00  .26718D-01   .60698D-01  .24122D-01   .46242D-01   .11720D+08
5785  9.87   5   1  4.00  .43553D-01   .72936D-01  .17550D-01   .57726D-01   .22100D+08
5785  5.88   5   1  4.00  .75908D-01   .11296D+00  .25914D-01   .89875D-01   .29770D+08
5785  9.88   5   1  4.00  .70856D-01   .13380D+00 -.25982D-01   .17407D-01   .33250D+08
5786  9.86   6   0  4.00  .18075D-01   .67191D-01  .15991D-01   .31385D-01   .11720D+08
5786  9.87   6   0  4.00  .45986D-01   .97444D-01  .25665D-01   .49408D-01   .22100D+08
5786  5.88   6   0  4.00  .79702D-01   .15296D+00  .40418D-01   .86005D-01   .29770D+08
5786  9.88   6   0  4.00  .70941D-01   .15091D+00 -.14448D-02   .24665D-01   .33250D+08
5891  9.86   1   0  4.00  .35564D-01   .11178D+00 -.77660D-02  -.25313D-02   .11720D+08
5891  9.87   1   0  4.00  .51700D-01   .12299D+00 -.82970D-04   .28573D-01   .22100D+08
```

```
5891  5.88   1   0  4.00  .83530D-01  .18092D+00 -.19421D-01  .13768D-01  .29770D+08
5891  9.88   1   0  4.00  .77237D-01  .17007D+00 -.22140D-01  .79567D-02  .33250D+08
5892  9.86   2   1  4.00  .44752D-01  .11368D+00 -.13713D-01  .73709D-02  .11720D+08
5892  9.87   2   1  4.00  .65184D-01  .12417D+00  .15423D-01  .77795D-01  .22100D+08
5892  5.88   2   1  4.00  .10448D+00  .19662D+00 -.21860D-01  .56030D-01  .29770D+08
5892  9.88   2   1  4.00  .97693D-01  .17618D+00  .11669D-01  .10160D+00  .33250D+08
5893  9.86   3   0  4.00  .30034D-01  .98347D-01 -.22105D-01 -.13561D-01  .11720D+08
5893  9.87   3   0  4.00  .42650D-01  .11060D+00 -.51395D-01 -.41769D-01  .22100D+08
5893  5.88   3   0  4.00  .71433D-01  .14750D+00 -.16130D-01  .27997D-01  .29770D+08
5893  9.88   3   0  4.00  .66811D-01  .15162D+00 -.52214D-01 -.29854D-01  .33250D+08
5894  9.86   4   1  4.00  .27392D-01  .64076D-01  .26380D-01  .56158D-01  .11720D+08
5894  9.87   4   1  4.00  .69013D-01  .13549D+00 -.55783D-02  .35968D-01  .22100D+08
5894  5.88   4   1  4.00  .10573D+00  .19023D+00 -.20099D-01  .45646D-01  .29770D+08
5894  9.88   4   1  4.00  .99085D-01  .18741D+00 -.21256D-01  .41821D-01  .33250D+08
5895  9.86   5   0  4.00  .42241D-01  .12609D+00  .39610D-02  .12263D-01  .11720D+08
5895  9.87   5   0  4.00  .64379D-01  .14564D+00  .78732D-02  .39305D-01  .22100D+08
5895  5.88   5   0  4.00  .92569D-01  .20261D+00 -.16504D-01  .14015D-01  .29770D+08
5895  9.88   5   0  4.00  .87239D-01  .20161D+00 -.34519D-01 -.12330D-01  .33250D+08
5896  9.86   6   1  4.00  .41779D-01  .10276D+00  .19993D-01  .60189D-01  .11720D+08
5896  9.87   6   1  4.00  .25821D-01  .60066D-01 -.33112D-01 -.30137D-01  .22100D+08
5896  5.88   6   1  4.00  .10462D+00  .19591D+00 -.15483D-01  .53737D-01  .29770D+08
5896  9.88   6   1  4.00  .94466D-01  .18698D+00 -.28133D-01  .30709D-01  .33250D+08
5291  9.86   1   1  5.00  .18760D-01  .63889D-01 -.12278D-01  .69685D-02  .11720D+08
5291  9.87   1   1  5.00  .58549D-01  .10756D+00  .95437D-02  .68820D-01  .22100D+08
5291  5.88   1   1  5.00  .10799D+00  .18373D+00  .14388D-01  .10405D+00  .29770D+08
5291  9.88   1   1  5.00  .10565D+00  .18766D+00 -.14467D-01  .57227D-01  .33250D+08
5292  9.86   2   0  5.00  .29606D-01  .82068D-01 -.62556D-02  .10307D-01  .11720D+08
5292  9.87   2   0  5.00  .78570D-01  .16511D+00  .91553D-03  .41095D-01  .22100D+08
5292  5.88   2   0  5.00  .13285D+00  .27478D+00  .59135D-02  .79535D-01  .29770D+08
5292  9.88   2   0  5.00  .12706D+00  .27292D+00 -.37662D-01  .98059D-02  .33250D+08
5293  9.86   3   1  5.00  .19652D-01  .57623D-01  .30037D-01  .59085D-01  .11720D+08
5293  9.87   3   1  5.00  .62024D-01  .10781D+00 -.36366D-02  .51132D-01  .22100D+08
5293  5.88   3   1  5.00  .10401D+00  .17208D+00  .15455D-01  .10796D+00  .29770D+08
5293  9.88   3   1  5.00  .90745D-01  .14885D+00  .17782D-01  .10071D+00  .33250D+08
5294  9.86   4   0  5.00  .35324D-01  .85739D-01 -.72756D-02  .10884D-01  .11720D+08
5294  9.87   4   0  5.00  .77484D-01  .16031D+00 -.14362D-01  .15222D-01  .22100D+08
5294  5.88   4   0  5.00  .12574D+00  .24104D+00  .12629D-01  .83123D-01  .29770D+08
5294  9.88   4   0  5.00  .12315D+00  .24042D+00 -.24049D-01  .37167D-01  .33250D+08
5295  9.86   5   1  5.00  .18816D-01  .62495D-01 -.12077D-01  .15163D-02  .11720D+08
5295  9.87   5   1  5.00  .66845D-01  .12119D+00  .97866D-02  .59741D-01  .22100D+08
5295  5.88   5   1  5.00  .10800D+00  .19131D+00  .19855D-01  .10382D+00  .29770D+08
5295  9.88   5   1  5.00  .97729D-01  .18127D+00 -.41778D-02  .58427D-01  .33250D+08
5296  9.86   6   0  5.00  .33170D-01  .93408D-01  .13407D-01  .25286D-01  .11720D+08
5296  9.87   6   0  5.00  .79595D-01  .16065D+00  .13412D-01  .50189D-01  .22100D+08
5296  5.88   6   0  5.00  .11703D+00  .22710D+00  .10756D-01  .75078D-01  .29770D+08
5296  9.88   6   0  5.00  .11919D+00  .23568D+00 -.82603D-02  .55623D-01  .33250D+08
5621  9.86   1   0  5.00  .42777D-01  .13515D+00  .32346D-01  .58783D-01  .11720D+08
5621  9.87   1   0  5.00  .72264D-01  .15597D+00  .16818D-01  .59954D-01  .22100D+08
5621  5.88   1   0  5.00  .11493D+00  .23388D+00  .46901D-01  .11990D+00  .29770D+08
5621  9.88   1   0  5.00  .10992D+00  .23561D+00 -.57604D-02  .48253D-01  .33250D+08
5622  9.86   2   1  5.00  .67769D-01  .14663D+00 -.12460D-01  .30376D-01  .11720D+08
5622  9.87   2   1  5.00  .94958D-01  .17675D+00 -.35676D-01  .33784D-01  .22100D+08
5622  5.88   2   1  5.00  .13993D+00  .24704D+00 -.25574D-01  .76457D-01  .29770D+08
5622  9.88   2   1  5.00  .13577D+00  .24401D+00 -.56734D-01  .37408D-01  .33250D+08
5623  9.86   3   0  5.00  .56472D-01  .14898D+00 -.20275D-02  .26234D-01  .11720D+08
5623  9.87   3   0  5.00  .71833D-01  .15959D+00 -.51582D-01 -.46952D-01  .22100D+08
5623  5.88   3   0  5.00  .12184D+00  .25176D+00 -.66867D-02  .40642D-01  .29770D+08
5623  9.88   3   0  5.00  .11880D+00  .23958D+00 -.39153D-01  .40448D-02  .33250D+08
5624  9.86   4   1  5.00  .76122D-01  .16517D+00 -.26612D-01  .16189D-01  .11720D+08
5624  9.87   4   1  5.00  .10684D+00  .19914D+00 -.64366D-01 -.17834D-02  .22100D+08
```

```
5624  5.88   4   1  5.00   .15543D+00   .26982D+00 -.34743D-01   .79776D-01   .29770D+08
5624  9.88   4   1  5.00   .15418D+00   .26922D+00 -.74813D-01   .21729D-01   .33250D+08
5625  9.86   5   0  5.00   .57021D-01   .15436D+00   .25511D-04   .27952D-01   .11720D+08
5625  9.87   5   0  5.00   .82155D-01   .17398D+00 -.17386D-01   .23202D-01   .22100D+08
5625  5.88   5   0  5.00   .12868D+00   .25359D+00 -.87636D-02   .49012D-01   .29770D+08
5625  9.88   5   0  5.00   .11591D+00   .23[illegible]7D+00 -.58431D-01  -.23432D-01   .33250D+08
5626  9.86   6   1  5.00   .79954D-01   .17603D+00 -.15276D-01   .43271D-01   .11720D+08
5626  9.87   6   1  5.00   .10836D+00   .20501D+00 -.40352D-01   .39716D-01   .22100D+08
5626  5.88   6   1  5.00   .14872D+00   .26833D+00 -.37091D-01   .71558D-01   .29770D+08
5626  9.88   6   1  5.00   .13436D+00   .24794D+00 -.82748D-01   .65465D-02   .33250D+08
5841  9.86   1   1  6.00   .66670D-01   .14952D+00 -.26602D-01   .72169D-02   .11720D+08
5841  9.87   1   1  6.00   .87310D-01   .17573D+00 -.18768D-01   .38045D-01   .22100D+08
5841  5.88   1   1  6.00   .11575D+00   .22764D+00 -.20879D-01   .58787D-01   .29770D+08
5841  9.88   1   1  6.00   .10518D+00   .21179D+00 -.60697D-01   .13585D-02   .33250D+08
5842  9.86   2   0  6.00   .54288D-01   .14885D+00   .62344D-02   .20050D-01   .11720D+08
5842  9.87   2   0  6.00   .85767D-01   .18018D+00   .14001D-01   .45782D-01   .22100D+08
5842  5.88   2   0  6.00   .13207D+00   .26110D+00   .41618D-01   .97758D-01   .29770D+08
5842  9.88   2   0  6.00   .12656D+00   .25800D+00 -.14784D-01   .15195D-01   .33250D+08
5843  9.86   3   1  6.00   .68867D-01   .14873D+00 -.14065D-01   .19192D-01   .11720D+08
5843  9.87   3   1  6.00   .83833D-01   .15106D+00   .76230D-02   .75458D-01   .22100D+08
5843  5.88   3   1  6.00   .12425D+00   .23724D+00 -.52016D-01   .17968D-01   .29770D+08
5843  9.88   3   1  6.00   .12121D+00   .23162D+00 -.65419D-01   .25663D-02   .33250D+08
5844  9.86   4   0  6.00   .48604D-01   .13614D+00   .14122D-01   .41504D-01   .11720D+08
5844  9.87   4   0  6.00   .60995D-01   .13615D+00   .35756D-02   .28174D-01   .22100D+08
5844  5.88   4   0  6.00   .11632D+00   .24039D+00 -.17269D-01   .17197D-01   .29770D+08
5844  9.88   4   0  6.00   .11050D+00   .23092D+00 -.22724D-01   .84119D-02   .33250D+08
5845  9.86   5   1  6.00   .60686D-01   .14092D+00 -.19253D-01   .97845D-02   .11720D+08
5845  9.87   5   1  6.00   .82841D-01   .16611D+00 -.36485D-01   .11328D-01   .22100D+08
5845  5.88   5   1  6.00   .11474D+00   .21773D+00 -.45996D-01   .23445D-01   .29770D+08
5845  9.88   5   1  6.00   .11011D+00   .22244D+00 -.59900D-01   .75924D-02   .33250D+08
5846  9.86   6   0  6.00   .49287D-01   .13978D+00 -.13194D-01  -.27726D-02   .11720D+08
5846  9.87   6   0  6.00   .78072D-01   .17192D+00 -.64714D-02   .23782D-01   .22100D+08
5846  5.88   6   0  6.00   .11597D+00   .25121D+00 -.21685D-01   .19047D-01   .29770D+08
5846  9.88   6   0  6.00   .10966D+00   .24103D+00 -.42839D-01  -.17653D-01   .33250D+08
5801  9.86   1   0  6.00   .45605D-01   .11118D+00   .42400D-01   .73992D-01   .11720D+08
5801  9.87   1   0  6.00   .70275D-01   .14473D+00   .18534D-01   .65097D-01   .22100D+08
5801  5.88   1   0  6.00   .11479D+00   .22959D+00   .23938D-01   .86412D-01   .29770D+08
5801  9.88   1   0  6.00   .11475D+00   .23322D+00   .25752D-01   .89970D-01   .33250D+08
5802  9.86   2   1  6.00   .67578D-01   .12024D+00 -.60627D-02   .36925D-01   .11720D+08
5802  9.87   2   1  6.00   .91754D-01   .16219D+00 -.28149D-01   .42045D-01   .22100D+08
5802  5.88   2   1  6.00   .12677D+00   .21853D+00 -.31754D-01   .69005D-01   .29770D+08
5802  9.88   2   1  6.00   .11835D+00   .21390D+00 -.43128D-01   .49962D-01   .33250D+08
5803  9.86   3   0  6.00   .44374D-01   .12387D+00 -.15886D-01  -.23968D-02   .11720D+08
5803  9.87   3   0  6.00   .69144D-01   .14337D+00   .63548D-02   .47011D-01   .22100D+08
5803  5.88   3   0  6.00   .10890D+00   .21481D+00   .25247D-01   .90262D-01   .29770D+08
5803  9.88   3   0  6.00   .10813D+00   .21840D+00   .40989D-02   .60167D-01   .33250D+08
5804  9.86   4   1  6.00   .63075D-01   .12923D+00 -.22338D-01   .10109D-01   .11720D+08
5804  9.87   4   1  6.00   .88697D-01   .15418D+00 -.13611D-02   .77442D-01   .22100D+08
5804  5.88   4   1  6.00   .12531D+00   .21081D+00   .36907D-03   .11012D+00   .29770D+08
5804  9.88   4   1  6.00   .12036D+00   .20806D+00 -.30438D-01   .65353D-01   .33250D+08
5805  9.86   5   0  6.00   .37281D-01   .10875D+00 -.95968D-02   .25313D-02   .11720D+08
5805  9.87   5   0  6.00   .43676D-01   .98475D-01   .16412D-01   .46821D-01   .22100D+08
5805  5.88   5   0  6.00   .10215D+00   .20408D+00   .18053D-01   .66216D-01   .29770D+08
5805  9.88   5   0  6.00   .90123D-01   .19783D+00 -.50892D-01  -.34457D-01   .33250D+08
5806  9.86   6   1  6.00   .68932D-01   .13248D+00 -.95468D-02   .35938D-01   .11720D+08
5806  9.87   6   1  6.00   .98405D-01   .16599D+00 -.13531D-01   .71529D-01   .22100D+08
5806  5.88   6   1  6.00   .13152D+00   .21473D+00 -.32413D-02   .11949D+00   .29770D+08
5806  9.88   6   1  6.00   .13036D+00   .21737D+00 -.44988D-01   .62007D-01   .33250D+08
5751  9.86   1   0  0.00   .16716D-01   .46882D-01 -.66007D-02  -.16779D-01   .11720D+08
5751  9.87   1   0  0.00   .32773D-01   .71249D-01 -.57897D-01  -.52599D-01   .22100D+08
```

```
5751  5.88   1   0  0.00  .48813D-01  .85916D-01 -.40534D-01 -.35523D-01  .29770D+08
5751  9.88   1   0  0.00  .27819D-01  .65863D-01 -.95205D-01 -.96292D-01  .33250D+08
5752  9.86   2   0  0.00  .22462D-01  .59997D-01 -.21141D-01 -.34439D-01  .11720D+08
5752  9.87   2   0  0.00  .35137D-01  .79098D-01 -.78437D-01 -.81408D-01  .22100D+08
5752  5.88   2   0  0.00  .51636D-01  .10288D+00 -.55391D-01 -.62964D-01  .29770D+08
5752  9.88   2   0  0.00  .41423D-01  .98455D-01 -.12066D+00 -.13929D+00  .33250D+08
3211  9.86   1   1  1.00  .12927D-01  .34323D-01  .16561D-01  .34739D-01  .11180D+08
3211  9.87   1   1  1.00  .39336D-01  .86273D-01 -.58110D-01 -.41065D-01  .21090D+08
3211  5.88   1   1  1.00  .56878D-01  .12123D+00 -.72435D-01 -.40688D-01  .28410D+08
3211  9.88   1   1  1.00  .58076D-01  .12776D+00 -.89823D-01 -.77575D-01  .31720D+08
3212  9.86   2   0  1.00  .18238D-01  .53448D-01 -.92399D-02 -.15973D-01  .11180D+08
3212  9.87   2   0  1.00  .33130D-01  .72877D-01  .16805D-01  .33268D-01  .21090D+08
3212  5.88   2   0  1.00  .50687D-01  .11109D+00 -.11444D-04  .19807D-01  .28410D+08
3212  9.88   2   0  1.00  .45779D-01  .11104D+00 -.12148D-01  .10960D-02  .31720D+08
3213  9.86   3   1  1.00  .15392D-01  .30890D-01  .89388D-02  .20631D-01  .11180D+08
3213  9.87   3   1  1.00  .25468D-02 -.64063D-03 -.45304D-01 -.10576D-01  .21090D+08
3213  5.88   3   1  1.00  .49157D-01  .91683D-01 -.39305D-01  .20873D-01  .28410D+08
3213  9.88   3   1  1.00  .49718D-01  .95212D-01 -.61107D-01 -.10160D-01  .31720D+08
3214  9.86   4   0  1.00  .11730D-01  .28965D-01  .96889D-02  .24808D-01  .11180D+08
3214  9.87   4   0  1.00  .18844D-01  .40905D-01  .81265D-02  .39959D-01  .21090D+08
3214  5.88   4   0  1.00  .40212D-01  .86503D-01 -.11557D-01  .18514D-01  .28410D+08
3214  9.88   4   0  1.00  .36115D-01  .80335D-01 -.56407D-01 -.25030D-01  .31720D+08
3215  9.86   5   1  1.00  .16732D-01  .39851D-01 -.28947D-01 -.11080D-01  .11180D+08
3215  9.87   5   1  1.00  .34105D-01  .50340D-01  .27690D-01  .91339D-01  .21090D+08
3215  5.88   5   1  1.00  .48307D-01  .88702D-01  .44537D-03  .73254D-01  .28410D+08
3215  9.88   5   1  1.00  .45286D-01  .73775D-01  .42229D-02  .97622D-01  .31720D+08
3216  9.86   6   0  1.00  .15310D-01  .41915D-01 -.84531D-02 -.73206D-02  .11180D+08
3216  9.87   6   0  1.00  .33173D-01  .70508D-01 -.25346D-01  .63081D-02  .21090D+08
3216  5.88   6   0  1.00  .45672D-01  .93774D-01 -.40649D-02  .39487D-01  .28410D+08
3216  9.88   6   0  1.00  .46660D-01  .93266D-01 -.17762D-01  .44938D-01  .31720D+08
3201  9.86   1   0  1.00  .10434D-01  .28189D-01  .62151D-02  .63193D-02  .11180D+08
3201  9.87   1   0  1.00  .25207D-01  .53045D-01 -.99897D-03  .12545D-01  .21090D+08
3201  5.88   1   0  1.00  .41071D-01  .81309D-01 -.95134D-02  .11302D-01  .28410D+08
3201  9.88   1   0  1.00  .29851D-01  .70470D-01 -.41638D-01 -.27043D-01  .31720D+08
3202  9.86   2   1  1.00  .21522D-01  .30686D-01  .16436D-01  .38989D-01  .11180D+08
3202  9.87   2   1  1.00  .58406D-01  .95616D-01  .14893D-01  .73792D-01  .21090D+08
3202  5.88   2   1  1.00  .63344D-01  .12197D+00 -.74531D-01 -.50793D-01  .28410D+08
3202  9.88   2   1  1.00  .42565D-01  .76926D-01 -.68823D-01 -.46724D-01  .31720D+08
3203  9.86   3   0  1.00  .14734D-01  .37344D-01  .19956D-01  .41130D-01  .11180D+08
3203  9.87   3   0  1.00  .32782D-01  .70463D-01  .36249D-02  .14154D-01  .21090D+08
3203  5.88   3   0  1.00  .51175D-01  .11318D+00 -.67338D-01 -.39175D-01  .28410D+08
3203  9.88   3   0  1.00  .44338D-01  .10478D+00 -.80689D-01 -.38043D-01  .31720D+08
3204  9.86   4   1  1.00  .25129D-01  .55719D-01  .13156D-02  .18572D-01  .11180D+08
3204  9.87   4   1  1.00  .47359D-01  .10157D+00 -.57632D-01 -.44334D-01  .21090D+08
3204  5.88   4   1  1.00  .60923D-01  .12039D+00 -.36375D-01 -.39792D-03  .28410D+08
3204  9.88   4   1  1.00  .57007D-01  .12485D+00 -.66014D-01 -.34719D-01  .31720D+08
3205  9.86   5   0  1.00  .14559D-01  .37529D-01  .10310D-01  .15815D-01  .11180D+08
3205  9.87   5   0  1.00  .35956D-01  .73614D-01  .61959D-02  .19482D-01  .21090D+08
3205  5.88   5   0  1.00  .47938D-01  .10501D+00 -.20502D-01  .11660D-01  .28410D+08
3205  9.88   5   0  1.00  .43413D-01  .93688D-01 -.57041D-01 -.25296D-01  .31720D+08
3206  9.86   6   1  1.00  .15601D-01  .43407D-01  .13425D-01  .34402D-01  .11180D+08
3206  9.87   6   1  1.00  .42637D-01  .66092D-01  .23335D-01  .92769D-01  .21090D+08
3206  5.88   6   1  1.00  .55519D-01  .11084D+00  .87228D-02  .58593D-01  .28410D+08
3206  9.88   6   1  1.00  .49967D-01  .11173D+00 -.35079D-01  .20992D-01  .31720D+08
2981  9.86   1   1  2.00  .13381D-01  .17057D-01  .19582D-01  .50585D-01  .11180D+08
2981  9.87   1   1  2.00  .28806D-01  .25765D-01  .33165D-01  .52408D-01  .21090D+08
2981  5.88   1   1  2.00  .64519D-01  .12862D+00 -.38886D-01 -.35369D-02  .28410D+08
2981  9.88   1   1  2.00  .64201D-01  .12691D+00 -.36433D-01  .42987D-03  .31720D+08
2982  9.86   2   0  2.00  .11211D-01  .15115D-01  .17280D-01  .33876D-01  .11180D+08
2982  9.87   2   0  2.00  .29896D-01  .60201D-01 -.18161D-01 -.14359D-01  .21090D+08
```

```
2982  5.88  2  0  2.00   .50623D-01  .11169D+00 -.57017D-01 -.23645D-01  .28410D+08
2982  9.88  2  0  2.00   .47366D-01  .10001D+00 -.66567D-01 -.45864D-01  .31720D+08
2983  9.86  3  1  2.00   .17993D-01  .41369D-01 -.18790D-01 -.17346D-01  .11180D+08
2983  9.87  3  1  2.00   .41655D-01  .85109D-01 -.39234D-01 -.32770D-01  .21090D+08
2983  5.88  3  1  2.00   .73667D-01  .14278D+00 -.26018D-01  .29787D-01  .28410D+08
2983  9.88  3  1  2.00   .73267D-01  .14406D+00 -.34139D-01  .49670D-02  .31720D+08
2984  9.86  4  0  2.00   .14682D-01  .38022D-01 -.17294D-01 -.87893D-02  .11180D+08
2984  9.87  4  0  2.00   .30845D-01  .51120D-01  .27090D-01  .58564D-01  .21090D+08
2984  5.88  4  0  2.00   .50064D-01  .10489D+00 -.27990D-01  .13092D-01  .28410D+08
2984  9.88  4  0  2.00   .50241D-01  .10450D+00 -.36847D-01  .28605D-02  .31720D+08
2985  9.86  5  1  2.00   .18227D-01  .39594D-01  .12093D-02  .13423D-01  .11180D+08
2985  9.87  5  1  2.00   .44082D-01  .83718D-01  .26717D-01  .64502D-01  .21090D+08
2985  5.88  5  1  2.00   .75569D-01  .14872D+00 -.14514D-01  .45721D-01  .28410D+08
2985  9.88  5  1  2.00   .71358D-01  .13858D+00 -.40178D-02  .38793D-01  .31720D+08
2986  9.86  6  0  2.00   .12853D-01  .31689D-01  .45283D-02  .16962D-01  .11180D+08
2986  9.87  6  0  2.00   .29011D-01  .42129D-01  .13541D-01  .45155D-01  .21090D+08
2986  5.88  6  0  2.00   .54720D-01  .10831D+00 -.13289D-01  .41560D-01  .28410D+08
2986  9.88  6  0  2.00   .53809D-01  .10697D+00 -.27842D-01  .29227D-01  .31720D+08
2411  9.86  1  0  2.00  -.18161D-02  .55318D-02 -.29452D-02 -.12289D-01  .11180D+08
2411  9.87  1  0  2.00   .25402D-01  .60981D-01  .39425D-02  .20145D-01  .21090D+08
2411  5.88  1  0  2.00   .70503D-01  .15795D+00 -.42148D-02  .33669D-01  .28410D+08
2411  9.88  1  0  2.00   .65272D-01  .14433D+00  .13120D-01  .56089D-01  .31720D+08
2412  9.86  2  1  2.00   .25056D-02  .86787D-02  .14347D-01  .27730D-01  .11180D+08
2412  9.87  2  1  2.00   .41593D-01  .67484D-01  .13554D-01  .63859D-01  .21090D+08
2412  5.88  2  1  2.00   .83143D-01  .14368D+00  .12058D-01  .95622D-01  .28410D+08
2412  9.88  2  1  2.00   .85191D-01  .14647D+00  .14493D-01  .82948D-01  .31720D+08
2413  9.86  3  0  2.00   .57988D-02  .31539D-01 -.12524D-01 -.22396D-01  .11180D+08
2413  9.87  3  0  2.00   .31629D-01  .76772D-01 -.12956D-01  .69618D-02  .21090D+08
2413  5.88  3  0  2.00   .68633D-01  .15034D+00 -.15118D-02  .32021D-01  .28410D+08
2413  9.88  3  0  2.00   .69097D-01  .15671D+00 -.40187D-01 -.90387D-02  .31720D+08
2414  9.86  4  1  2.00   .25564D-02  .11568D-01 -.15109D-02  .83866D-02  .11180D+08
2414  9.87  4  1  2.00   .37064D-01  .68482D-01 -.20361D-01  .10780D-01  .21090D+08
2414  5.88  4  1  2.00   .75036D-01  .14210D+00 -.16140D-01  .49249D-01  .28410D+08
2414  9.88  4  1  2.00   .79890D-01  .14935D+00 -.11163D-01  .43023D-01  .31720D+08
2415  9.86  5  0  2.00   .88602D-02  .35253D-01 -.26448D-02 -.55902D-02  .11180D+08
2415  9.87  5  0  2.00   .42547D-01  .84049D-01  .21490D-01  .54107D-01  .21090D+08
2415  5.88  5  0  2.00   .73987D-01  .15314D+00  .23661D-01  .70734D-01  .28410D+08
2415  9.88  5  0  2.00   .77118D-01  .16071D+00 -.24512D-02  .43832D-01  .31720D+08
2416  9.86  6  1  2.00   .14733D-02  .13387D-01  .89738D-02  .17087D-01  .11180D+08
2416  9.87  6  1  2.00   .40767D-01  .69606D-01  .22406D-01  .68668D-01  .21090D+08
2416  5.88  6  1  2.00   .80350D-01  .14524D+00  .38682D-01  .12371D+00  .28410D+08
2416  9.88  6  1  2.00   .98828D-01  .17100D+00  .64956D-01  .16817D+00  .31720D+08
2531  9.86  1  1  3.50   .70527D-01  .17410D+00  .14187D-01  .62316D-01  .11180D+08
2531  9.87  1  1  3.50   .10758D+00  .23787D+00  .26320D-01  .93184D-01  .21090D+08
2531  5.88  1  1  3.50   .15413D+00  .38901D+00  .12475D-01  .11204D+00  .28410D+08
2531  9.88  1  1  3.50   .15527D+00  .31985D+00  .32217D-01  .13587D+00  .31720D+08
2532  9.86  2  0  3.50   .58607D-01  .13964D+00  .17744D-01  .77304D-01  .11180D+08
2532  9.87  2  0  3.50   .96731D-01  .19617D+00 -.13863D-01  .49567D-01  .21090D+08
2532  5.88  2  0  3.50   .14410D+00  .30273D+00 -.20243D-01  .87817D-01  .28410D+08
2532  9.88  2  0  3.50   .14696D+00  .30222D+00 -.33595D-01  .61826D-01  .31720D+08
2533  9.86  3  1  3.50   .76242D-01  .17611D+00  .10965D-02  .40969D-01  .11180D+08
2533  9.87  3  1  3.50   .12146D+00  .24006D+00  .99521D-02  .72571D-01  .21090D+08
2533  5.88  3  1  3.50   .17006D+00  .32829D+00  .69344D-02  .11994D+00  .28410D+08
2533  9.88  3  1  3.50   .17452D+00  .33829D+00 -.57561D-02  .93094D-01  .31720D+08
2534  9.86  4  0  3.50   .61641D-01  .14570D+00 -.31761D-01  .37391D-01  .11180D+08
2534  9.87  4  0  3.50   .71691D-01  .12111D+00  .20843D-01  .14204D+00  .21090D+08
2534  5.88  4  0  3.50   .15032D+00  .32257D+00 -.43193D-01  .92645D-01  .28410D+08
2534  9.88  4  0  3.50   .16310D+00  .34395D+00 -.93149D-01  .17977D-01  .31720D+08
2535  9.86  5  1  3.50   .77664D-01  .16235D+00  .51906D-02  .57521D-01  .11180D+08
2535  9.87  5  1  3.50   .11778D+00  .21372D+00  .37391D-01  .12442D+00  .21090D+08
```

```
2535  5.88  5  1  3.50  .17918D+00  .30862D+00  .89821D-01  .28975D+00  .28410D+08
2535  9.88  5  1  3.50  .19000D+00  .33239D+00  .88407D-01  .24989D+00  .31720D+08
2536  9.86  6  0  3.50  .62243D-01  .14963D+00 -.15680D-01  .49597D-01  .11180D+08
2536  9.87  6  0  3.50  .98961D-01  .19652D+00 -.17303D-01  .71779D-01  .21090D+08
2536  9.88  6  0  3.50  .18103D+00  .38136D+00 -.75794D-01  .37057D-01  .31720D+08
1781  9.86  1  0  3.50  .10842D+00  .24420D+00  .46659D-02  .11364D+00  .11180D+08
1781  9.87  1  0  3.50  .14952D+00  .31258D+00  .91342D-02  .15918D+00  .21090D+08
1781  5.88  1  0  3.50  .23389D+00  .49263D+00  .70904D-02  .18110D+00  .28410D+08
1781  9.88  1  0  3.50  .25526D+00  .54394D+00 -.55524D-01  .10015D+00  .31720D+08
1782  9.86  2  1  3.50  .13402D+00  .28513D+00 -.13915D-01  .65106D-01  .11180D+08
1782  9.87  2  1  3.50  .19367D+00  .37348D+00  .21422D-02  .12387D+00  .21090D+08
1782  5.88  2  1  3.50  .25427D+00  .47771D+00  .97013D-01  .28635D+00  .28410D+08
1782  9.88  2  1  3.50  .25656D+00  .48157D+00  .92954D-01  .29044D+00  .31720D+08
1783  9.86  3  0  3.50  .10133D+00  .30418D+00  .23603D-04  .12342D-01  .11180D+08
1783  9.87  3  0  3.50  .13823D+00  .34809D+00  .97513D-03  .56919D-01  .21090D+08
1783  5.88  3  0  3.50  .21588D+00  .53197D+00  .25203D-01  .94950D-01  .28410D+08
1783  9.88  3  0  3.50  .22768D+00  .56531D+00 -.15735D-01  .42762D-01  .31720D+08
1784  9.86  4  1  3.50  .12407D+00  .25821D+00  .37730D-02  .85998D-01  .11180D+08
1784  9.87  4  1  3.50  .15916D+00  .29789D+00  .74185D-01  .22609D+00  .21090D+08
1784  5.88  4  1  3.50  .23343D+00  .43026D+00  .93433D-01  .30542D+00  .28410D+08
1784  9.88  4  1  3.50  .23970D+00  .43224D+00  .10424D+00  .32827D+00  .31720D+08
1785  9.86  5  0  3.50  .94025D-01  .20181D+00  .24532D-01  .13947D+00  .11180D+08
1785  9.87  5  0  3.50  .14280D+00  .28045D+00  .32244D-01  .16786D+00  .21090D+08
1785  5.88  5  0  3.50  .23152D+00  .46887D+00  .35898D-01  .21561D+00  .28410D+08
1785  9.88  5  0  3.50  .24978D+00  .51324D+00 -.24992D-02  .17467D+00  .31720D+08
1786  9.86  6  1  3.50  .12222D+00  .25585D+00  .17664D-01  .93659D-01  .11180D+08
1786  9.87  6  1  3.50  .17284D+00  .32997D+00  .45552D-01  .16347D+00  .21090D+08
1786  5.88  6  1  3.50  .23558D+00  .44604D+00  .74529D-01  .25098D+00  .28410D+08
1786  9.88  6  1  3.50  .23710D+00  .44878D+00  .87692D-01  .27116D+00  .31720D+08
2941  9.86  1  1  4.00  .12249D-01  .18158D-01 -.12400D-02 -.23477D-02  .11180D+08
2941  9.87  1  1  4.00  .23319D-01  .36362D-01  .17379D-01  .44930D-01  .21090D+08
2941  5.88  1  1  4.00  .73834D-01  .13098D+00 -.14194D-01  .32854D-01  .28410D+08
2941  9.88  1  1  4.00  .63592D-01  .10830D+00 -.52128D-02  .47149D-01  .31720D+08
2942  9.86  2  0  4.00  .11112D-01  .41248D-01 -.14585D-01 -.25941D-01  .11180D+08
2942  9.87  2  0  4.00  .24827D-01  .46014D-01  .30868D-01  .65605D-01  .21090D+08
2942  5.88  2  0  4.00  .65620D-01  .13172D+00 -.26071D-02  .49670D-01  .28410D+08
2942  9.88  2  0  4.00  .63930D-01  .12642D+00 -.61036D-02  .43953D-01  .31720D+08
2943  9.86  3  1  4.00  .17560D-01  .26392D-01  .26757D-01  .49953D-01  .11180D+08
2943  9.87  3  1  4.00  .42742D-01  .65194D-01  .33627D-01  .82266D-01  .21090D+08
2943  5.88  3  1  4.00  .80434D-01  .13761D+00  .15115D-01  .76076D-01  .28410D+08
2943  9.88  3  1  4.00  .76914D-01  .13776D+00 -.32669D-02  .55435D-01  .31720D+08
2944  9.86  4  0  4.00  .10702D-01  .14948D-01  .29591D-01  .57337D-01  .11180D+08
2944  9.87  4  0  4.00  .34691D-01  .69052D-01 -.25973D-02  .10152D-01  .21090D+08
2944  5.88  4  0  4.00  .66955D-01  .13493D+00 -.17052D-02  .50820D-01  .28410D+08
2944  9.88  4  0  4.00  .62802D-01  .13390D+00 -.36294D-01 -.23553D-02  .31720D+08
2945  9.86  5  1  4.00  .10833D-01  .20805D-01 -.61719D-02 -.36383D-02  .11180D+08
2945  9.87  5  1  4.00  .28336D-01  .41971D-01  .42394D-01  .91363D-01  .21090D+08
2945  5.88  5  1  4.00  .63145D-01  .11189D+00  .24628D-01  .90997D-01  .28410D+08
2946  9.86  6  0  4.00  .84807D-02  .13746D-01 -.80718D-02 -.75798D-02  .11180D+08
2946  9.87  6  0  4.00  .35984D-01  .74610D-01  .85485D-02  .25455D-01  .21090D+08
2946  5.88  6  0  4.00  .59666D-01  .12319D+00 -.14985D-01  .31189D-01  .28410D+08
2946  9.88  6  0  4.00  .54237D-01  .11417D+00 -.27853D-01  .15574D-01  .31720D+08
2911  9.86  1  0  4.00  .14460D-01  .39174D-01  .62213D-02  .81062D-02  .11180D+08
2911  9.87  1  0  4.00  .35102D-01  .67165D-01  .24113D-01  .45201D-01  .21090D+08
2911  5.88  1  0  4.00  .82169D-01  .17279D+00 -.19259D-02  .42864D-01  .28410D+08
2911  9.88  1  0  4.00  .86892D-01  .17039D+00 -.19784D-01  .21807D-01  .31720D+08
2912  9.86  2  1  4.00  .16752D-01  .29358D-01  .17319D-01  .25427D-01  .11180D+08
2912  9.87  2  1  4.00  .34570D-01  .69641D-01 -.15986D-01 -.23458D-02  .21090D+08
2912  5.88  2  1  4.00  .84942D-01  .15679D+00 -.11187D-01  .41183D-01  .28410D+08
2912  9.88  2  1  4.00  .84615D-01  .15619D+00 -.21339D-01  .31371D-01  .31720D+08
```

2913	9.86	3	0	4.00	.15319D-01	.39246D-01	.17216D-01	.27572D-01	.11180D+08
2913	9.87	3	0	4.00	.29928D-01	.61089D-01	.91505D-02	.20074D-01	.21090D+08
2913	5.88	3	0	4.00	.66373D-01	.13914D+00	.16940D-01	.63838D-01	.28410D+08
2913	9.88	3	0	4.00	.72904D-01	.15137D+00	-.14967D-01	.13567D-01	.31720D+08
2914	9.86	4	1	4.00	.21799D-01	.29463D-01	.21343D-01	.43307D-01	.11180D+08
2914	9.87	4	1	4.00	.38124D-01	.61527D-01	.18440D-01	.67268D-01	.21090D+08
2914	5.88	4	1	4.00	.99041D-01	.17491D+00	-.19471D-01	.59562D-01	.28410D+08
2914	9.88	4	1	4.00	.97460D-01	.17869D+00	-.12735D-01	.77883D-01	.31720D+08
2915	9.86	5	0	4.00	.14207D-01	.32289D-01	-.67902D-02	-.11900D-01	.11180D+08
2915	9.87	5	0	4.00	.28122D-01	.50187D-01	.44572D-01	.78569D-01	.21090D+08
2915	5.88	5	0	4.00	.73221D-01	.15626D+00	.94295D-03	.45371D-01	.28410D+08
2915	9.88	5	0	4.00	.73318D-01	.14444D+00	.16299D-01	.71130D-01	.31720D+08
2916	9.86	6	1	4.00	.23628D-01	.26205D-01	.23869D-01	.44873D-01	.11180D+08
2916	9.87	6	1	4.00	.29977D-01	.23326D-01	.39907D-01	.98776D-01	.21090D+08
2916	9.88	6	1	4.00	.96443D-01	.15852D+00	-.18107D-02	.76515D-01	.31720D+08
1951	9.86	1	1	5.00	.40411D-02	.19237D-01	-.47624D-02	-.66113D-02	.11180D+08
1951	9.87	1	1	5.00	.50153D-01	.91306D-01	.24208D-01	.74774D-01	.21090D+08
1951	5.88	1	1	5.00	.98053D-01	.16416D+00	.39519D-01	.13005D+00	.28410D+08
1951	9.88	1	1	5.00	.97072D-01	.16735D+00	.40695D-01	.12890D+00	.31720D+08
1952	9.86	2	0	5.00	-.21409D-02	-.20177D-02	.20887D-01	.40007D-01	.11180D+08
1952	9.87	2	0	5.00	.31188D-01	.58379D-01	.11490D-01	.30605D-01	.21090D+08
1952	5.88	2	0	5.00	.10153D+00	.21069D+00	-.25105D-02	.33701D-01	.28410D+08
1952	9.88	2	0	5.00	.10811D+00	.22360D+00	-.17423D-01	.94063D-02	.31720D+08
1953	9.86	3	1	5.00	.46125D-02	.12911D-01	.23191D-02	.11657D-01	.11180D+08
1953	9.87	3	1	5.00	.46307D-01	.75857D-01	.39426D-01	.10172D+00	.21090D+08
1953	5.88	3	1	5.00	.94447D-01	.15220D+00	.59905D-01	.16005D+00	.28410D+08
1953	9.88	3	1	5.00	.96773D-01	.15952D+00	.48538D-01	.14542D+00	.31720D+08
1954	9.86	4	0	5.00	.24490D-02	.79417D-02	.89817D-02	.18261D-01	.11180D+08
1954	9.87	4	0	5.00	.37424D-01	.57068D-01	.19979D-01	.50310D-01	.21090D+08
1954	5.88	4	0	5.00	.10736D+00	.19668D+00	-.21659D-01	.23322D-01	.28410D+08
1954	9.88	4	0	5.00	.10919D+00	.20733D+00	-.37633D-01	-.61319D-02	.31720D+08
1955	9.86	5	1	5.00	.77714D-02	.16779D-01	.40138D-02	.24960D-01	.11180D+08
1955	9.87	5	1	5.00	.44180D-01	.52395D-01	.72837D-01	.17317D+00	.21090D+08
1955	5.88	5	1	5.00	.10755D+00	.17325D+00	.39993D-01	.14884D+00	.28410D+08
1955	9.88	5	1	5.00	.10069D+00	.16820D+00	.48451D-02	.87330D-01	.31720D+08
1956	9.86	6	0	5.00	.38551D-02	.17884D-01	.50695D-02	.71423D-02	.11180D+08
1956	9.87	6	0	5.00	.39519D-01	.64651D-01	.30093D-02	.28601D-01	.21090D+08
1956	5.88	6	0	5.00	.93699D-01	.16635D+00	-.64801D-02	.52451D-01	.28410D+08
1956	9.88	6	0	5.00	.10022D+00	.17977D+00	-.26568D-01	.18162D-01	.31720D+08
2831	9.86	1	1	6.00	.33100D-01	.77628D-01	-.92721D-03	.21813D-01	.11180D+08
2831	9.87	1	1	6.00	.64800D-01	.10984D+00	.40697D-01	.10586D+00	.21090D+08
2831	5.88	1	1	6.00	.13379D+00	.23746D+00	.59757D-01	.16869D+00	.28410D+08
2831	9.88	1	1	6.00	.12878D+00	.22969D+00	.73466D-01	.18942D+00	.31720D+08
2832	9.86	2	0	6.00	.30880D-01	.90468D-01	.71254D-02	.16119D-01	.11180D+08
2832	9.87	2	0	6.00	.80357D-01	.16094D+00	.76032D-03	.41085D-01	.21090D+08
2832	5.88	2	0	6.00	.13229D+00	.27003D+00	-.79811D-02	.65488D-01	.28410D+08
2832	9.88	2	0	6.00	.13397D+00	.27209D+00	-.23163D-01	.44712D-01	.31720D+08
2833	9.86	3	1	6.00	.38293D-01	.81240D-01	-.43554D-02	.27711D-01	.11180D+08
2833	9.87	3	1	6.00	.75688D-01	.12096D+00	.27764D-01	.10077D+00	.21090D+08
2833	5.88	3	1	6.00	.12587D+00	.20884D+00	.18408D-01	.11845D+00	.28410D+08
2833	9.88	3	1	6.00	.11736D+00	.21064D+00	-.11023D-01	.73014D-01	.31720D+08
2834	9.86	4	0	6.00	.30731D-01	.91848D-01	.12048D-01	.27040D-01	.11180D+08
2834	9.87	4	0	6.00	.77986D-01	.15058D+00	.37872D-01	.10496D+00	.21090D+08
2834	5.88	4	0	6.00	.17070D+00	.34390D+00	.26381D-02	.96156D-01	.28410D+08
2834	9.88	4	0	6.00	.17499D+00	.34545D+00	.41337D-02	.10113D+00	.31720D+08
2835	9.86	5	1	6.00	.35654D-01	.77523D-01	-.34877D-02	.24436D-01	.11180D+08
2835	9.87	5	1	6.00	.70668D-01	.12466D+00	.25355D-01	.97391D-01	.21090D+08
2835	5.88	5	1	6.00	.11462D+00	.20415D+00	.25922D-02	.96373D-01	.28410D+08
2835	9.88	5	1	6.00	.11692D+00	.21235D+00	-.40437D-02	.96740D-01	.31720D+08
2836	9.86	6	0	6.00	.31425D-01	.72668D-01	.43465D-01	.69722D-01	.11180D+08

```
2836  9.87  6  0  6.00  .79759D-01  .17750D+00 -.22788D-02  .37428D-01  .21090D+08
2836  5.88  6  0  6.00  .12983D+00  .29537D+00 -.20409D-01  .41152D-01  .28410D+08
2836  9.88  6  0  6.00  .13036D+00  .29168D+00 -.34384D-01  .20782D-01  .31720D+08
2811  9.86  1  0  6.00  .59875D-01  .15394D+00  .33982D-02  .31483D-01  .11180D+08
2811  9.87  1  0  6.00  .89222D-01  .18343D+00  .30324D-01  .78099D-01  .21090D+08
2811  5.88  1  0  6.00  .17662D+00  .35664D+00 -.27585D-01  .51188D-01  .28410D+08
2811  9.88  1  0  6.00  .17157D+00  .34434D+00 -.11012D-01  .70636D-01  .31720D+08
2812  9.86  2  1  6.00  .71480D-01  .13418D+00  .20469D-01  .84151D-01  .11180D+08
2812  9.87  2  1  6.00  .96325D-01  .16335D+00  .45751D-01  .13862D+00  .21090D+08
2812  5.88  2  1  6.00  .13314D+00  .23212D+00  .84457D-02  .11771D+00  .28410D+08
2812  9.88  2  1  6.00  .13552D+00  .23478D+00 -.11773D-01  .93903D-01  .31720D+08
2813  9.86  3  0  6.00  .62385D-01  .15878D+00  .79565D-02  .34657D-01  .11180D+08
2813  9.87  3  0  6.00  .90096D-01  .18451D+00  .26814D-01  .72414D-01  .21090D+08
2813  5.88  3  0  6.00  .18546D+00  .38180D+00 -.33482D-01  .44434D-01  .28410D+08
2813  9.88  3  0  6.00  .18598D+00  .37686D+00 -.27165D-01  .49528D-01  .31720D+08
2814  9.86  4  1  6.00  .67239D-01  .12717D+00  .15938D-01  .67768D-01  .11180D+08
2814  9.87  4  1  6.00  .87205D-01  .14743D+00  .31370D-01  .11234D+00  .21090D+08
2814  5.88  4  1  6.00  .12802D+00  .22486D+00 -.68316D-02  .10043D+00  .28410D+08
2814  9.88  4  1  6.00  .12753D+00  .23084D+00 -.18834D-01  .88020D-01  .31720D+08
2815  9.86  5  0  6.00  .55672D-01  .15397D+00  .10473D-01  .32983D-01  .11180D+08
2815  9.87  5  0  6.00  .76614D-01  .16159D+00  .17823D-01  .51595D-01  .21090D+08
2815  5.88  5  0  6.00  .17849D+00  .36255D+00 -.87159D-02  .84850D-01  .28410D+08
2815  9.88  5  0  6.00  .18493D+00  .37395D+00 -.27243D-01  .47674D-01  .31720D+08
2816  9.86  6  1  6.00  .69114D-01  .15323D+00 -.18415D-01 -.37680D-02  .11180D+08
2816  9.87  6  1  6.00  .86301D-01  .14674D+00  .29137D-01  .10379D+00  .21090D+08
2816  5.88  6  1  6.00  .13859D+00  .24288D+00  .70286D-03  .11206D+00  .28410D+08
2816  9.88  6  1  6.00  .13626D+00  .24071D+00 -.34120D-02  .10986D+00  .31720D+08
3001  9.86  1  0  0.00  .16453D-01  .23429D-01  .16541D-01  .47663D-01  .11180D+08
3001  9.87  1  0  0.00  .34244D-01  .45293D-01 -.11987D-01  .44844D-01  .21090D+08
3001  5.88  1  0  0.00  .45340D-01  .78690D-01 -.71815D-01 -.16354D-01  .28410D+08
3001  9.88  1  0  0.00  .43425D-01  .83071D-01 -.94189D-01 -.41793D-01  .31720D+08
3002  9.86  2  0  0.00  .[illegible]4184D-01  .28151D-01  .23167D-01  .34241D-01  .11180D+08
3002  9.87  2  0  0.00  .36327D-01  .68982D-01 -.54249D-01 -.41197D-01  .21090D+08
3002  5.88  2  0  0.00  .41903D-01  .78194D-01 -.78373D-01 -.54416D-01  .28410D+08
3002  9.88  2  0  0.00  .33274D-01  .11231D+00 -.13443D+00 -.12214D+00  .31720D+08
1351  9.86  1  1  1.00  .18959D-01  .45679D-01 -.44248D-02 -.37227D-02  .11180D+08
1351  9.87  1  1  1.00  .41835D-01  .77865D-01  .28845D-02  .26455D-01  .21090D+08
1351  5.88  1  1  1.00  .62093D-01  .11841D+00 -.73540D-02  .29982D-01  .28410D+08
1351  9.88  1  1  1.00  .65422D-01  .12405D+00 -.27595D-01  .97451D-02  .31720D+08
1352  9.86  2  0  1.00  .10463D-01  .38720D-01  .27297D-01  .36391D-01  .11180D+08
1352  9.87  2  0  1.00  .16962D-01  .22386D-01  .27805D-01  .85875D-01  .21090D+08
1352  5.88  2  0  1.00  .43915D-01  .96685D-01 -.40712D-01  .86236D-03  .28410D+08
1352  9.88  2  0  1.00  .46088D-01  .10289D+00 -.83717D-01 -.49206D-01  .31720D+08
1353  9.86  3  1  1.00  .15017D-01  .33585D-01  .45354D-01  .74229D-01  .11180D+08
1353  9.87  3  1  1.00  .31973D-01  .65594D-01  .25882D-01  .57654D-01  .21090D+08
1353  5.88  3  1  1.00  .55311D-01  .10632D+00 -.45733D-02  .19920D-01  .28410D+08
1353  9.88  3  1  1.00  .57879D-01  .11445D+00 -.17637D-01 -.47405D-02  .31720D+08
1354  9.86  4  0  1.00  .10522D-01  .37502D-01  .24894D-02 -.17452D-03  .11180D+08
1354  9.87  4  0  1.00  .42518D-01  .95522D-01 -.34604D-01 -.53282D-01  .21090D+08
1354  5.88  4  0  1.00  .53687D-01  .11965D+00 -.86846D-02  .72012D-02  .28410D+08
1354  9.88  4  0  1.00  .56202D-01  .12473D+00 -.34269D-01 -.26008D-01  .31720D+08
1355  9.86  5  1  1.00  .10402D-01  .36823D-01  .14187D-01  .19291D-01  .11180D+08
1355  9.87  5  1  1.00  .31870D-01  .70365D-01  .77062D-02  .18166D-01  .21090D+08
1355  5.88  5  1  1.00  .59668D-01  .12050D+00 -.11807D-01 -.10521D-02  .28410D+08
1355  9.88  5  1  1.00  .58275D-01  .12017D+00 -.16402D-01 -.71790D-02  .31720D+08
1356  9.86  6  0  1.00  .72089D-02  .25150D-01  .96295D-02  .14463D-01  .11180D+08
1356  9.87  6  0  1.00  .25364D-01  .59299D-01 -.17600D-01 -.18868D-01  .21090D+08
1356  5.88  6  0  1.00  .41307D-01  .90586D-01 -.12246D-01  .51680D-02  .28410D+08
1356  9.88  6  0  1.00  .33967D-01  .79846D-01 -.48843D-01 -.43679D-01  .31720D+08
1231  9.86  1  0  1.00  .77302D-02  .30095D-01 -.96979D-02 -.17700D-01  .11180D+08
```

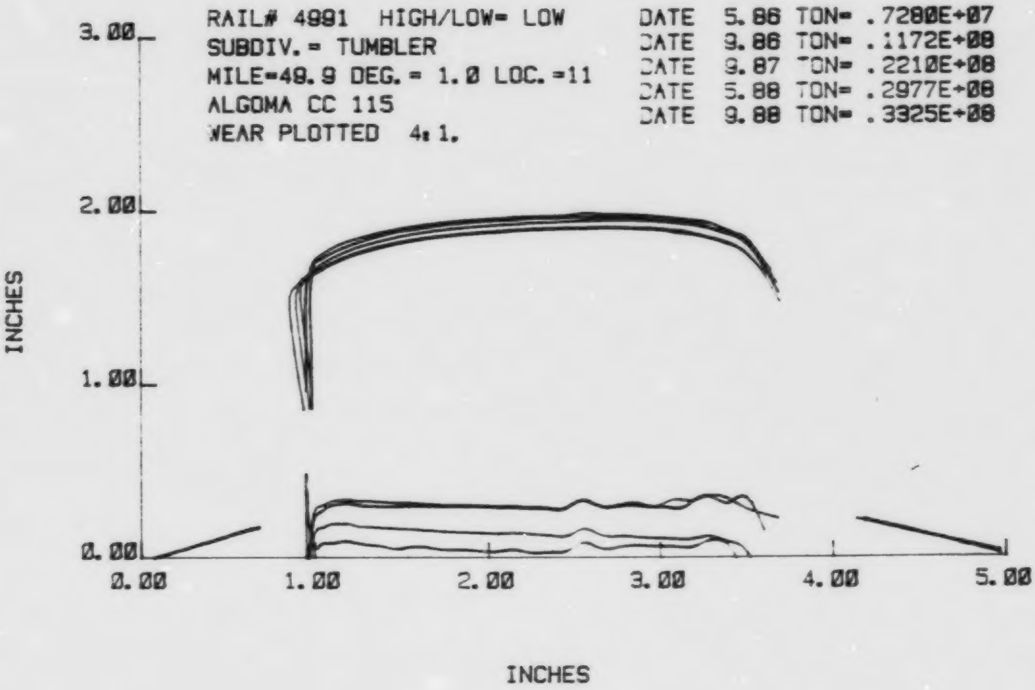
```
1231  9.87  1  0  1.00  .22870D-01  .54976D-01 -.32741D-01 -.76193D-01  .21090D+08
1231  5.88  1  0  1.00  .46824D-01  .10275D+00 -.32275D-01 -.57557D-01  .28410D+08
1231  9.88  1  0  1.00  .51683D-01  .12204D+00 -.77953D-01 -.11207D+00  .31720D+08
1232  9.86  2  1  1.00  .12289D-01  .29586D-01  .39398D-01  .44506D-01  .11180D+08
1232  9.87  2  1  1.00  .30894D-01  .63058D-01 -.10568D-01 -.95444D-02  .21090D+08
1232  5.88  2  1  1.00  .50181D-01  .10808D+00 -.17901D-01  .10730D-01  .28410D+08
1232  9.88  2  1  1.00  .47052D-01  .96071D-01 -.17841D-01  .27106D-02  .31720D+08
1233  9.86  3  1  1.00  .12770D-01  .43947D-01  .30557D-01  .45580D-01  .11180D+08
1233  9.87  3  1  1.00  .28739D-01  .56637D-01  .54161D-01  .12878D+00  .21090D+08
1233  5.88  3  1  1.00  .50568D-01  .10679D+00  .46107D-01  .12860D+00  .28410D+08
1233  9.88  3  1  1.00  .50394D-01  .11474D+00  .33392D-01  .10651D+00  .31720D+08
1234  9.86  4  1  1.00  .24317D-01  .69564D-01 -.11809D-01 -.19572D-01  .11180D+08
1234  9.87  4  1  1.00  .42357D-01  .87493D-01 -.21510D-01  .27012D-01  .21090D+08
1234  5.88  4  1  1.00  .66069D-01  .13488D+00 -.10024D-01  .26589D-01  .28410D+08
1234  9.88  4  1  1.00  .62292D-01  .13270D+00 -.47222D-01 -.72548D-02  .31720D+08
1235  9.86  5  0  1.00  .12076D-01  .34115D-01  .13782D-01  .20022D-01  .11180D+08
1235  9.87  5  0  1.00  .30050D-01  .63309D-01  .83697D-03  .22145D-01  .21090D+08
1235  5.88  5  0  1.00  .46989D-01  .98297D-01 -.23037D-02  .41443D-01  .28410D+08
1235  9.88  5  0  1.00  .54852D-01  .11645D+00 -.39717D-01 -.46563D-02  .31720D+08
1236  9.86  6  1  1.00  .23779D-01  .54454D-01 -.42329D-02  .93664D-02  .11180D+08
1236  9.87  6  1  1.00  .51691D-01  .92112D-01  .82664D-02  .71220D-01  .21090D+08
1236  5.88  6  1  1.00  .74912D-01  .14744D+00  .15514D-01  .76911D-01  .28410D+08
1236  9.88  6  1  1.00  .77957D-01  .15354D+00 -.58415D-02  .51224D-01  .31720D+08
6411  9.86  1  1  2.00  .30179D-01  .77792D-01 -.40396D-02  .74372D-02  .11720D+08
6411  9.87  1  1  2.00  .44567D-01  .86466D-01  .35025D-01  .79195D-01  .22100D+08
6411  5.88  1  1  2.00  .88002D-01  .16936D+00  .48635D-01  .11419D+00  .29770D+08
6411  9.88  1  1  2.00  .83788D-01  .16563D+00  .23486D-01  .53869D-01  .33250D+08
6412  9.86  2  0  2.00  .24837D-01  .69211D-01  .21376D-01  .33085D-01  .11720D+08
6412  9.87  2  0  2.00  .33736D-01  .69500D-01  .49225D-01  .82751D-01  .22100D+08
6412  5.88  2  0  2.00  .72645D-01  .15836D+00  .46461D-01  .10318D+00  .29770D+08
6412  9.88  2  0  2.00  .70363D-01  .15202D+00  .15056D-03  .40527D-01  .33250D+08
6413  9.86  3  1  2.00  .34836D-01  .77303D-01  .11129D-01  .28787D-01  .11720D+08
6413  9.87  3  1  2.00  .32339D-01  .64628D-01 -.25417D-01 -.14704D-01  .22100D+08
6413  5.88  3  1  2.00  .95918D-01  .17228D+00  .70179D-01  .15367D+00  .29770D+08
6413  9.88  3  1  2.00  .97879D-01  .18386D+00  .28431D-01  .72939D-01  .33250D+08
6414  9.86  4  0  2.00  .43753D-01  .11781D+00  .26813D-01  .55062D-01  .11720D+08
6414  9.87  4  0  2.00  .57549D-01  .12391D+00  .28453D-01  .65778D-01  .22100D+08
6414  5.88  4  0  2.00  .91187D-01  .19528D+00  .45625D-01  .11919D+00  .29770D+08
6414  9.88  4  0  2.00  .81963D-01  .17273D+00  .39452D-01  .11684D+00  .33250D+08
6415  9.86  5  1  2.00  .30627D-01  .77481D-01  .41701D-02  .30250D-01  .11720D+08
6415  9.87  5  1  2.00  .43234D-01  .82880D-01  .44579D-01  .10108D+00  .22100D+08
6415  5.88  5  1  2.00  .83481D-01  .15764D+00  .49406D-01  .13830D+00  .29770D+08
6415  9.88  5  1  2.00  .84643D-01  .16436D+00  .33933D-01  .92670D-01  .33250D+08
6416  9.86  6  0  2.00  .28106D-01  .78469D-01  .93670D-02  .21060D-01  .11720D+08
6416  9.87  6  0  2.00  .44153D-01  .93400D-01 -.28362D-01  .15714D-01  .22100D+08
6416  5.88  6  0  2.00  .80502D-01  .18078D+00 -.14925D-01  .49422D-01  .29770D+08
6416  9.88  6  0  2.00  .75851D-01  .17274D+00 -.56550D-01 -.34733D-02  .33250D+08
6511  9.86  1  0  2.00  .39695D-01  .10278D+00  .30546D-01  .63356D-01  .11720D+08
6511  9.87  1  0  2.00  .49813D-01  .11255D+00 -.39807D-01 -.29240D-02  .22100D+08
6511  5.88  1  0  2.00  .10429D+00  .19676D+00  .23799D-01  .11526D+00  .29770D+08
6511  9.88  1  0  2.00  .10500D+00  .19620D+00  .31594D-01  .12576D+00  .33250D+08
6512  9.86  2  1  2.00  .41144D-01  .10326D+00  .19883D-01  .51706D-01  .11720D+08
6512  9.87  2  1  2.00  .69598D-01  .14031D+00  .59185D-02  .67204D-01  .22100D+08
6512  5.88  2  1  2.00  .11277D+00  .20817D+00 -.82853D-02  .97982D-01  .29770D+08
6512  9.88  2  1  2.00  .11096D+00  .20785D+00 -.68159D-02  .89261D-01  .33250D+08
6513  9.86  3  0  2.00  .35801D-01  .10317D+00 -.11251D-01  .22275D-01  .11720D+08
6513  9.87  3  0  2.00  .59749D-01  .13185D+00 -.32552D-01  .35359D-01  .22100D+08
6513  5.88  3  0  2.00  .10546D+00  .22374D+00 -.22774D-01  .63586D-01  .29770D+08
6513  9.88  3  0  2.00  .95102D-01  .19240D+00 -.22521D-01  .69175D-01  .33250D+08
6514  9.86  4  1  2.00  .45777D-01  .11113D+00  .12079D-01  .46141D-01  .11720D+08
```

```
6514  9.87  4  1  2.00  .72256D-01  .13823D+00  .25249D-01  .85337D-01  .22100D+08
6514  5.88  4  1  2.00  .11560D+00  .21525D+00  .49245D-02  .10845D+00  .29770D+08
6514  9.88  4  1  2.00  .11725D+00  .21702D+00  .58765D-02  .10042D+00  .33250D+08
6515  9.86  5  0  2.00  .36656D-01  .10546D+00  .19509D-01  .47466D-01  .11720D+08
6515  9.87  5  0  2.00  .27329D-01  .67534D-01 -.59915D-01 -.33966D-01  .22100D+08
6515  5.88  5  0  2.00  .98818D-01  .19757D+00  .35501D-01  .13142D+00  .29770D+08
6515  9.88  5  0  2.00  .10817D+00  .21526D+00 -.26417D-01  .52955D-01  .33250D+08
6516  9.86  6  1  2.00  .40629D-01  .11181D+00 -.17814D-01  .25437D-01  .11720D+08
6516  9.87  6  1  2.00  .59196D-01  .12257D+00 -.30885D-02  .37095D-01  .22100D+08
6516  5.88  6  1  2.00  .11618D+00  .21714D+00  .11177D-02  .10651D+00  .29770D+08
6516  9.88  6  1  2.00  .11283D+00  .21570D+00 -.97432D-02  .89391D-01  .33250D+08
 801  9.86  1  1  3.00  .45395D-01  .10259D+00 -.49751D-02  .47216D-02  .11180D+08
 801  9.87  1  1  3.00  .83243D-01  .15654D+00  .14999D-01  .66545D-01  .21090D+08
 801  5.88  1  1  3.00  .15650D+00  .28245D+00  .76162D-01  .21379D+00  .28410D+08
 801  9.88  1  1  3.00  .16543D+00  .29911D+00  .73453D-01  .20399D+00  .31720D+08
 802  9.86  2  0  3.00  .33514D-01  .10375D+00 -.48430D-02  .17790D-01  .11180D+08
 802  9.87  2  0  3.00  .60671D-01  .14682D+00  .11635D-01  .57627D-01  .21090D+08
 802  5.88  2  0  3.00  .14274D+00  .32136D+00 -.56524D-02  .94303D-01  .28410D+08
 802  9.88  2  0  3.00  .14702D+00  .33065D+00 -.30200D-01  .58439D-01  .31720D+08
 803  9.86  3  1  3.00  .67400D-01  .15915D+00  .55161D-02  .44302D-01  .11180D+08
 803  9.87  3  1  3.00  .10968D+00  .22012D+00  .11192D-01  .91349D-01  .21090D+08
 803  5.88  3  1  3.00  .18633D+00  .35332D+00  .43544D-01  .19768D+00  .28410D+08
 803  9.88  3  1  3.00  .19563D+00  .37270D+00  .35458D-01  .18168D+00  .31720D+08
 804  9.86  4  0  3.00  .65660D-01  .18792D+00 -.27361D-02  .33624D-01  .11180D+08
 804  9.87  4  0  3.00  .92262D-01  .29273D+00 -.26187D-01  .26549D-01  .21090D+08
 804  5.88  4  0  3.00  .16940D+00  .38666D+00 -.70453D-04  .12426D+00  .28410D+08
 804  9.88  4  0  3.00  .17738D+00  .40221D+00 -.89835D-02  .10936D+00  .31720D+08
 805  9.86  5  1  3.00  .60682D-01  .12571D+00 -.64545D-02  .32638D-01  .11180D+08
 805  9.87  5  1  3.00  .94875D-01  .16783D+00  .37644D-01  .12589D+00  .21090D+08
 805  5.88  5  1  3.00  .16285D+00  .29179D+00  .75300D-01  .23486D+00  .28410D+08
 805  9.88  5  1  3.00  .16720D+00  .29297D+00  .10734D+00  .27443D+00  .31720D+08
 806  9.86  6  0  3.00  .46347D-01  .14782D+00  .99611D-02  .41175D-01  .11180D+08
 806  9.87  6  0  3.00  .79626D-01  .22147D+00  .23568D-01  .75616D-01  .21090D+08
 806  5.88  6  0  3.00  .15991D+00  .35900D+00  .99719D-02  .11119D+00  .28410D+08
 806  9.88  6  0  3.00  .16141D+00  .36022D+00 -.86136D-02  .86278D-01  .31720D+08
6721  9.87  1  0  3.00  .47017D-01  .80853D-01 -.32481D-02  .32155D-01  .22100D+08
6721  5.88  1  0  3.00  .96381D-01  .17702D+00  .24987D-01  .76292D-01  .29770D+08
6721  9.88  1  0  3.00  .92008D-01  .16271D+00 -.37411D-02  .50729D-01  .33250D+08
6722  9.87  2  1  3.00  .72736D-01  .12223D+00  .11152D-01  .66006D-01  .22100D+08
6722  5.88  2  1  3.00  .11514D+00  .20291D+00  .15932D-01  .11448D+00  .29770D+08
6722  9.88  2  1  3.00  .10980D+00  .22326D+00 -.23482D-01  .51894D-01  .33250D+08
6723  9.87  3  0  3.00  .56520D-01  .11720D+00 -.75055D-01 -.59323D-01  .22100D+08
6723  5.88  3  0  3.00  .10882D+00  .21382D+00 -.28504D-01  .15599D-01  .29770D+08
6723  9.88  3  0  3.00  .10972D+00  .22031D+00 -.80058D-01 -.50276D-01  .33250D+08
6724  9.87  4  1  3.00  .70102D-01  .12660D+00 -.29644D-01 -.15082D-02  .22100D+08
6724  5.88  4  1  3.00  .11310D+00  .19838D+00 -.39461D-02  .70967D-01  .29770D+08
6724  9.88  4  1  3.00  .10675D+00  .19429D+00 -.37397D-01  .24977D-01  .33250D+08
6725  9.87  5  0  3.00  .59754D-01  .97243D-01 -.26335D-01  .14436D-01  .22100D+08
6725  5.88  5  0  3.00  .99386D-01  .18085D+00  .87023D-03  .52969D-01  .29770D+08
6725  9.88  5  0  3.00  .83741D-01  .14155D+00 -.10368D-01  .51940D-01  .33250D+08
6726  9.87  6  1  3.00  .55795D-01  .10303D+00  .22602D-02  .32636D-01  .22100D+08
6726  5.88  6  1  3.00  .11013D+00  .19920D+00 -.20288D-01  .42277D-01  .29770D+08
6726  9.88  6  1  3.00  .10950D+00  .20959D+00 -.29767D-01  .30183D-01  .33250D+08
 521  9.86  1  1  3.50  .60385D-01  .13453D+00  .61951D-02  .38209D-01  .11180D+08
 521  9.87  1  1  3.50  .11784D+00  .21983D+00  .16894D-01  .85233D-01  .21090D+08
 521  5.88  1  1  3.50  .17531D+00  .31650D+00  .58685D-01  .17270D+00  .28410D+08
 521  9.88  1  1  3.50  .18757D+00  .34380D+00  .38534D-01  .15225D+00  .31720D+08
 522  9.86  2  0  3.50  .48364D-01  .13317D+00 -.31567D-03  .29494D-01  .11180D+08
 522  9.87  2  0  3.50  .87864D-01  .17607D+00  .21135D-01  .94307D-01  .21090D+08
 522  5.88  2  0  3.50  .15298D+00  .31900D+00 -.48170D-02  .99437D-01  .28410D+08
 522   9.88   2   0  3.50  .17459D+00  .35661D+00 -.27885D-01  .81777D-01  .31720D+08
 523   9.86   3   1  3.50  .55810D-01  .12474D+00  .33646D-02  .27256D-01  .11180D+08
 523   9.87   3   1  3.50  .10939D+00  .21116D+00  .99268D-02  .81986D-01  .21090D+08
 523   5.88   3   1  3.50  .16324D+00  .29221D+00  .17773D-01  .13485D+00  .28410D+08
 523   9.88   3   1  3.50  .17815D+00  .32012D+00  .22197D-03  .11597D+00  .31720D+08
 524   9.86   4   0  3.50  .36585D-01  .12000D+00  .40603D-03  .16585D-01  .11180D+08
 524   9.87   4   0  3.50  .81089D-01  .18544D+00  .13900D-02  .47085D-01  .21090D+08
 524   5.88   4   0  3.50  .12690D+00  .27459D+00  .11630D-01  .10840D+00  .28410D+08
 524   9.88   4   0  3.50  .14209D+00  .30892D+00 -.31477D-01  .60158D-01  .31720D+08
 525   9.86   5   1  3.50  .53019D-01  .12043D+00  .98019D-02  .40480D-01  .11180D+08
 525   9.87   5   1  3.50  .99016D-01  .18851D+00  .40534D-01  .11219D+00  .21090D+08
 525   5.88   5   1  3.50  .15053D+00  .28308D+00  .36011D-01  .13521D+00  .28410D+08
 525   9.88   5   1  3.50  .17067D+00  .31704D+00  .34715D-01  .14396D+00  .31720D+08
 526   9.86   6   0  3.50  .38903D-01  .11704D+00  .17324D-01  .54751D-01  .11180D+08
 526   9.87   6   0  3.50  .80112D-01  .19614D+00 -.79873D-02  .28940D-01  .21090D+08
 526   5.88   6   0  3.50  .13902D+00  .30859D+00 -.45700D-02  .83075D-01  .28410D+08
 526   9.88   6   0  3.50  .15719D+00  .33943D+00 -.44312D-01  .51256D-01  .31720D+08
 711   9.86   1   0  3.50  .34588D-01  .10499D+00 -.25991D-01  .27965D-01  .11180D+08
 711   9.87   1   0  3.50  .70715D-01  .20846D+00 -.96025D-02  .75256D-01  .21090D+08
 711   5.88   1   0  3.50  .13564D+00  .35875D+00 -.53150D-01  .38707D-01  .28410D+08
 711   9.88   1   0  3.50  .14097D+00  .39547D+00 -.75616D-01  .24869D-01  .31720D+08
 712   9.86   2   1  3.50  .40960D-01  .95340D-01  .24128D-01  .46730D-01  .11180D+08
 712   9.87   2   1  3.50  .93417D-01  .16739D+00 -.51463D-02  .60061D-01  .21090D+08
 712   5.88   2   1  3.50  .14633D+00  .26730D+00  .10046D-01  .11256D+00  .28410D+08
 712   9.88   2   1  3.50  .16876D+00  .30629D+00  .16396D-01  .13706D+00  .31720D+08
 713   9.86   3   0  3.50  .38972D-01  .11571D+00  .49186D-02  .24808D-01  .11180D+08
 713   9.87   3   0  3.50  .92893D-01  .21285D+00  .10868D-01  .75841D-01  .21090D+08
 713   5.88   3   0  3.50  .15524D+00  .33783D+00  .39292D-01  .14916D+00  .28410D+08
 713   9.88   3   0  3.50  .17734D+00  .39934D+00 -.22309D-01  .73227D-01  .31720D+08
 714   9.86   4   1  3.50  .48440D-01  .97717D-01  .30551D-01  .76439D-01  .11180D+08
 714   9.87   4   1  3.50  .11555D+00  .20075D+00  .24523D-01  .11681D+00  .21090D+08
 714   5.88   4   1  3.50  .17199D+00  .29964D+00  .62513D-01  .21707D+00  .28410D+08
 714   9.88   4   1  3.50  .20150D+00  .34956D+00  .60603D-01  .23265D+00  .31720D+06
 715   9.86   5   0  3.50  .35112D-01  .11285D+00 -.16705D-01 -.76745D-02  .11180D+08
 715   9.87   5   0  3.50  .75436D-01  .17357D+00  .36797D-01  .11554D+00  .21090D+08
 715   5.88   5   0  3.50  .14526D+00  .33502D+00 -.10968D-01  .74428D-01  .28410D+08
 715   9.88   5   0  3.50  .16206D+00  .37835D+00 -.54987D-01  .25019D-01  .31720D+08
 716   9.87   6   1  3.50  .50880D-01  .66088D-01 -.12008D-01  .21394D-01  .21090D+08
 716   5.88   6   1  3.50  .11127D+00  .18399D+00  .26744D-01  .12278D+00  .28410D+08
 716   9.88   6   1  3.50  .12884D+00  .21937D+00  .89107D-02  .10769D+00  .31720D+08
7121   9.86   1   1  4.00  .15342D-01  .46327D-01 -.18532D-01 -.22295D-01  .86500D+07
7121   9.87   1   1  4.00  .30711D-01  .62776D-01 -.19961D-01 -.13872D-01  .16120D+08
7121   5.88   1   1  4.00  .58647D-01  .10678D+00  .64113D-02  .35834D-01  .21760D+08
7121   9.88   1   1  4.00  .50609D-01  .10213D+00 -.21974D-01  .23611D-02  .24220D+08
7122   9.86   2   0  4.00  .16067D-01  .40509D-01 -.91698D-02 -.58539D-02  .86500D+07
7122   9.87   2   0  4.00  .24120D-01  .51928D-01 -.32314D-01 -.48500D-01  .16120D+08
7122   5.88   2   0  4.00  .59988D-01  .12043D+00  .14425D-01  .39619D-01  .21760D+08
7122   9.88   2   0  4.00  .53294D-01  .11902D+00 -.22560D-01 -.46373D-01  .24220D+08
7123   9.86   3   1  4.00  .14690D-01  .36202D-01 -.12883D-01 -.74756D-02  .86500D+07
7123   9.87   3   1  4.00  .34552D-01  .67279D-01 -.15265D-01  .86932D-02  .16120D+08
7123   5.88   3   1  4.00  .59819D-01  .10271D+00  .16389D-01  .72090D-01  .21760D+08
7123   9.88   3   1  4.00  .53890D-01  .10277D+00 -.54359D-01 -.21006D-01  .24220D+08
7124   9.86   4   0  4.00  .15104D-01  .51339D-01 -.13762D-01 -.16639D-01  .86500D+07
7124   9.87   4   0  4.00  .36093D-01  .68843D-01 -.17848D-02  .12151D-01  .16120D+08
7124   5.88   4   0  4.00  .64932D-01  .12260D+00  .82557D-02  .31800D-01  .21760D+08
7124   9.88   4   0  4.00  .60387D-01  .11968D+00 -.22908D-01 -.64189D-02  .24220D+08
7125   9.86   5   1  4.00  .10648D-01  .26528D-01 -.83902D-02  .10606D-01  .86500D+07
7125   9.87   5   1  4.00  .29724D-01  .49831D-01  .10824D-03  .40232D-01  .16120D+08
7125   5.88   5   1  4.00  .55156D-01  .95962D-01 -.12476D-01  .46632D-01  .21760D+08
7125   9.88   5   1  4.00  .46510D-01  .79325D-01 -.27276D-01  .34980D-01  .24220D+08
```

```
7126  9.86  6  0  4.00  .16062D-01  .47410D-01  .27772D-02  .20266D-03  .86500D+07
7126  9.87  6  0  4.00  .33186D-01  .65422D-01  .51897D-02  .16717D-01  .16120D+08
7126  5.88  6  0  4.00  .59318D-01  .12249D+00  .11846D-01  .36469D-01  .21760D+08
7126  9.88  6  0  4.00  .58609D-01  .11932D+00  .45061D-04  .21463D-01  .24220D+08
 371  9.86  1  0  4.00  .36024D-01  .95850D-01  .11101D-01  .32061D-01  .11180D+08
 371  9.87  1  0  4.00  .60047D-01  .13200D+00  .29221D-02  .27689D-01  .21090D+08
 371  5.88  1  0  4.00  .10158D+00  .20983D+00 -.84972D-03  .54760D-01  .28410D+08
 371  9.88  1  0  4.00  .10203D+00  .20965D+00  .53234D-02  .69480D-01  .31720D+08
 372  9.86  2  1  4.00  .38395D-01  .80693D-01  .39206D-01  .75504D-01  .11180D+08
 372  9.87  2  1  4.00  .67041D-01  .11607D+00  .33032D-01  .99959D-01  .21090D+08
 372  5.88  2  1  4.00  .12438D+00  .26759D+00  .37785D-01  .14875D+00  .28410D+08
 372  9.88  2  1  4.00  .13426D+00  .23555D+00  .32067D-01  .13664D+00  .31720D+08
 373  9.86  3  0  4.00  .18453D-01  .51463D-01 -.17674D-02  .15337D-01  .11180D+08
 373  9.87  3  0  4.00  .40833D-01  .77545D-01  .14435D-01  .57081D-01  .21090D+08
 373  5.88  3  0  4.00  .83761D-01  .16307D+00  .39716D-02  .74897D-01  .28410D+08
 373  9.88  3  0  4.00  .87905D-01  .17472D+00 -.23591D-01  .46439D-01  .31720D+08
 374  9.86  4  1  4.00  .42025D-01  .11373D+00 -.19316D-01 -.16865D-01  .11180D+08
 374  9.87  4  1  4.00  .62080D-01  .12582D+00 -.44346D-03  .39297D-01  .21090D+08
 374  5.88  4  1  4.00  .12071D+00  .22832D+00  .49448D-03  .75164D-01  .28410D+08
 374  9.88  4  1  4.00  .13122D+00  .24813D+00 -.26700D-02  .65668D-01  .31720D+08
 375  9.86  5  0  4.00  .29079D-01  .85369D-01  .33297D-01  .51006D-01  .11180D+08
 375  9.87  5  0  4.00  .51199D-01  .11174D+00  .33659D-01  .64000D-01  .21090D+08
 375  5.88  5  0  4.00  .95672D-01  .20165D+00  .81074D-02  .58060D-01  .28410D+08
 375  9.88  5  0  4.00  .10644D+00  .21910D+00 -.30127D-02  .48259D-01  .31720D+08
 376  9.86  6  1  4.00  .37288D-01  .88077D-01  .33897D-01  .63735D-01  .11180D+08
 376  9.87  6  1  4.00  .58119D-01  .10307D+00  .70860D-01  .13246D+00  .21090D+08
 376  5.88  6  1  4.00  .11696D+00  .21082D+00  .83571D-01  .18036D+00  .28410D+08
 376  9.88  6  1  4.00  .12641D+00  .22460D+00  .90633D-01  .18881D+00  .31720D+08
7211  9.86  1  1  5.00  .16400D-01  .60608D-01  .10272D-01  .38315D-01  .86500D+07
7211  9.87  1  1  5.00  .41496D-01  .82210D-01  .27888D-01  .85864D-01  .16120D+08
7211  5.88  1  1  5.00  .81293D-01  .15389D+00  .27909D-01  .10174D+00  .21760D+08
7211  9.88  1  1  5.00  .84512D-01  .16063D+00  .19445D-02  .77162D-01  .24220D+08
7212  9.86  2  0  5.00  .37717D-01  .11284D+00  .59938D-02  .13481D-01  .86500D+07
7212  9.87  2  0  5.00  .68004D-01  .14547D+00  .13723D-02  .26447D-01  .16120D+08
7212  5.88  2  0  5.00  .10607D+00  .23242D+00  .64080D-02  .60415D-01  .21760D+08
7212  9.88  2  0  5.00  .10851D+00  .23284D+00 -.95205D-02  .40221D-01  .24220D+08
7213  9.86  3  1  5.00  .20812D-01  .58549D-01  .13914D-01  .51136D-01  .86500D+07
7213  9.87  3  1  5.00  .41726D-01  .86727D-01  .19884D-03  .49147D-01  .16120D+08
7213  5.88  3  1  5.00  .81598D-01  .14897D+00  .29003D-01  .10549D+00  .21760D+08
7213  9.88  3  1  5.00  .79512D-01  .15380D+00 -.76237D-02  .57305D-01  .24220D+08
7214  9.86  4  0  5.00  .31363D-01  .96423D-01  .82901D-02  .16489D-01  .86500D+07
7214  9.87  4  0  5.00  .57077D-01  .12950D+00 -.37647D-01 -.33532D-01  .16120D+08
7214  5.88  4  0  5.00  .97608D-01  .21322D+00 -.23942D-02  .47142D-01  .21760D+08
7214  9.88  4  0  5.00  .10408D+00  .22627D+00 -.49660D-01 -.10217D-01  .24220D+08
7215  9.86  5  1  5.00  .20155D-01  .53661D-01  .11441D-01  .43994D-01  .86500D+07
7215  9.87  5  1  5.00  .26326D-01  .51457D-01 -.25628D-02  .35244D-01  .16120D+08
7215  5.88  5  1  5.00  .74455D-01  .12446D+00  .33754D-01  .10832D+00  .21760D+08
7215  9.88  5  1  5.00  .71214D-01  .13426D+00 -.47709D-01 -.27180D-04  .24220D+08
7216  9.86  6  0  5.00  .41614D-01  .12791D+00 -.84056D-02 -.20139D-02  .86500D+07
7216  9.87  6  0  5.00  .63280D-01  .15091D+00 -.23916D-01 -.14614D-01  .16120D+08
7216  5.88  6  0  5.00  .10102D+00  .22955D+00  .14180D-02  .44513D-01  .21760D+08
7216  9.88  6  0  5.00  .10152D+00  .22672D+00 -.35425D-01 -.21293D-02  .24220D+08
7421  9.86  1  0  5.00  .29064D-01  .99712D-01  .78659D-02  .30095D-01  .86500D+07
7421  9.87  1  0  5.00  .50583D-01  .12225D+00  .33417D-02  .28139D-01  .16120D+08
7421  5.88  1  0  5.00  .10648D+00  .24576D+00  .20911D-01  .79186D-01  .21760D+08
7421  9.88  1  0  5.00  .10343D+00  .24058D+00 -.37039D-01 -.10138D-02  .24220D+08
7422  9.86  2  1  5.00  .41499D-01  .95047D-01  .16731D-01  .39091D-01  .86500D+07
7422  9.87  2  1  5.00  .63636D-01  .12768D+00 -.10115D-01  .23237D-01  .16120D+08
7422  5.88  2  1  5.00  .11335D+00  .21424D+00  .20916D-02  .61484D-01  .21760D+08
7422  9.88  2  1  5.00  .10577D+00  .20123D+00 -.54244D-01 -.10770D-01  .24220D+08
```

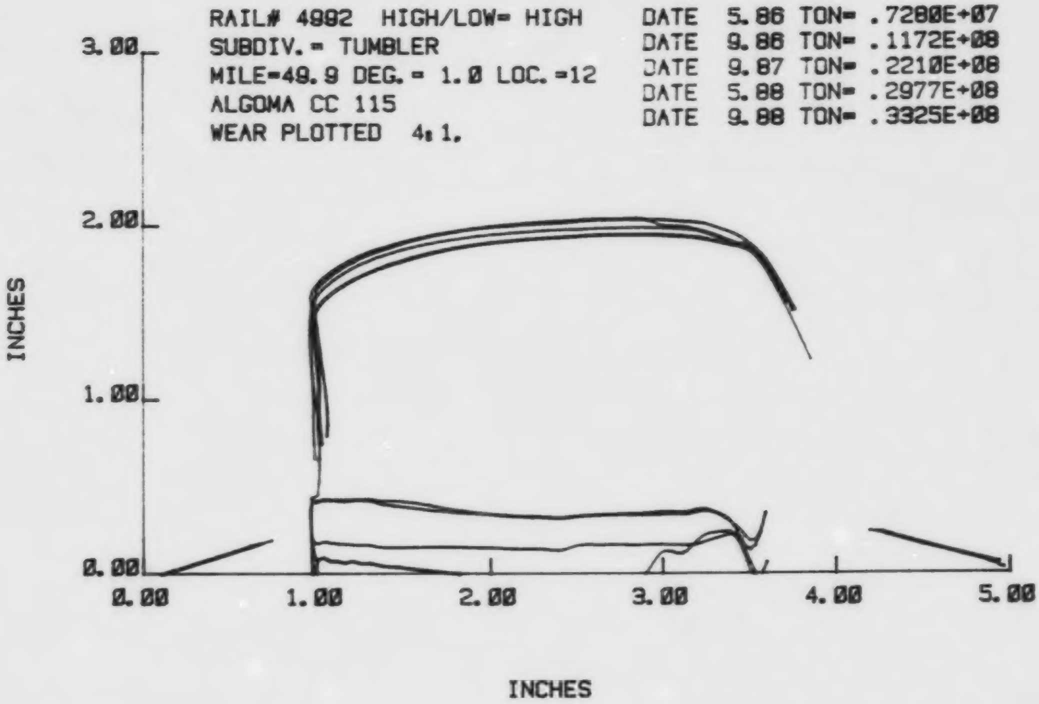
```
 522  9.88  2  0  3.50  .17459D+00  .35661D+00 -.27885D-01  .81777D-01  .31720D+08
 523  9.86  3  1  3.50  .55810D-01  .12474D+00  .33646D-02  .27256D-01  .11180D+08
 523  9.87  3  1  3.50  .10939D+00  .21116D+00  .99268D-02  .81986D-01  .21090D+08
 523  5.88  3  1  3.50  .16324D+00  .29221D+00  .17773D-01  .13485D+00  .28410D+08
 523  9.88  3  1  3.50  .17815D+00  .32012D+00  .22197D-03  .11597D+00  .31720D+08
 524  9.86  4  0  3.50  .36585D-01  .12000D+00  .40603D-03  .16585D-01  .11180D+08
 524  9.87  4  0  3.50  .81089D-01  .18544D+00  .13900D-02  .47085D-01  .21090D+08
 524  5.88  4  0  3.50  .12690D+00  .27459D+00  .11630D-01  .10840D+00  .28410D+08
 524  9.88  4  0  3.50  .14209D+00  .30892D+00 -.31477D-01  .60158D-01  .31720D+08
 525  9.86  5  1  3.50  .53019D-01  .12043D+00  .98019D-02  .40480D-01  .11180D+08
 525  9.87  5  1  3.50  .99016D-01  .18851D+00  .40534D-01  .11219D+00  .21090D+08
 525  5.88  5  1  3.50  .15053D+00  .28308D+00  .36011D-01  .13521D+00  .28410D+08
 525  9.88  5  1  3.50  .17067D+00  .31704D+00  .34715D-01  .14396D+00  .31720D+08
 526  9.86  6  0  3.50  .38903D-01  .11704D+00  .17324D-01  .54751D-01  .11180D+08
 526  9.87  6  0  3.50  .80112D-01  .19614D+00 -.79873D-02  .28940D-01  .21090D+08
 526  5.88  6  0  3.50  .13902D+00  .30859D+00 -.45700D-02  .83075D-01  .28410D+08
 526  9.88  6  0  3.50  .15719D+00  .33943D+00 -.44312D-01  .51256D-01  .31720D+08
 711  9.86  1  0  3.50  .34588D-01  .10499D+00 -.25991D-01  .27965D-01  .11180D+08
 711  9.87  1  0  3.50  .70715D-01  .20846D+00 -.96025D-02  .75256D-01  .21090D+08
 711  5.88  1  0  3.50  .13564D+00  .35875D+00 -.53150D-01  .38707D-01  .28410D+08
 711  9.88  1  0  3.50  .14097D+00  .39547D+00 -.75616D-01  .24869D-01  .31720D+08
 712  9.86  2  1  3.50  .40960D-01  .95340D-01  .24128D-01  .46730D-01  .11180D+08
 712  9.87  2  1  3.50  .93417D-01  .16739D+00 -.51463D-02  .60061D-01  .21090D+08
 712  5.88  2  1  3.50  .14633D+00  .26730D+00  .10046D-01  .11256D+00  .28410D+08
 712  9.88  2  1  3.50  .16876D+00  .30629D+00  .16396D-01  .13706D+00  .31720D+08
 713  9.86  3  0  3.50  .38972D-01  .11571D+00  .49186D-02  .24808D-01  .11180D+08
 713  9.87  3  0  3.50  .92893D-01  .21285D+00  .10868D-01  .75841D-01  .21090D+08
 713  5.88  3  0  3.50  .15524D+00  .33783D+00  .39292D-01  .14916D+00  .28410D+08
 713  9.88  3  0  3.50  .17734D+00  .39934D+00 -.22309D-01  .73227D-01  .31720D+08
 714  9.86  4  1  3.50  .48440D-01  .97717D-01  .30551D-01  .76439D-01  .11180D+08
 714  9.87  4  1  3.50  .11555D+00  .20075D+00  .24523D-01  .11681D+00  .21090D+08
 714  5.88  4  1  3.50  .17199D+00  .29964D+00  .62513D-01  .21707D+00  .28410D+08
 714  9.88  4  1  3.50  .20150D+00  .34956D+00  .60603D-01  .23265D+00  .31720D+08
 715  9.86  5  0  3.50  .35112D-01  .11285D+00 -.16705D-01 -.76745D-02  .11180D+08
 715  9.87  5  0  3.50  .75436D-01  .17357D+00  .36797D-01  .11554D+00  .21090D+08
 715  5.88  5  0  3.50  .14526D+00  .33502D+00 -.10968D-01  .74428D-01  .28410D+08
 715  9.88  5  0  3.50  .16206D+00  .37835D+00 -.54987D-01  .25019D-01  .31720D+08
 716  9.87  6  1  3.50  .50880D-01  .66088D-01 -.12008D-01  .21394D-01  .21090D+08
 716  5.88  6  1  3.50  .11127D+00  .18399D+00  .26744D-01  .12278D+00  .28410D+08
 716  9.88  6  1  3.50  .12884D+00  .21937D+00  .89107D-02  .10769D+00  .31720D+08
7121  9.86  1  1  4.00  .15342D-01  .46327D-01 -.18532D-01 -.22295D-01  .86500D+07
7121  9.87  1  1  4.00  .30711D-01  .62776D-01 -.19961D-01 -.13872D-01  .16120D+08
7121  5.88  1  1  4.00  .58647D-01  .10678D+00  .64113D-02  .35834D-01  .21760D+08
7121  9.88  1  1  4.00  .50609D-01  .10213D+00 -.21974D-01  .23611D-02  .24220D+08
7122  9.86  2  0  4.00  .16067D-01  .40509D-01 -.91698D-02 -.58539D-02  .86500D+07
7122  9.87  2  0  4.00  .24120D-01  .51928D-01 -.32314D-01 -.48500D-01  .16120D+08
7122  5.88  2  0  4.00  .59988D-01  .12043D+00  .14425D-01  .39619D-01  .21760D+08
7122  9.88  2  0  4.00  .53294D-01  .11902D+00 -.22560D-01 -.16373D-01  .24220D+08
7123  9.86  3  1  4.00  .14690D-01  .36202D-01 -.12683D-01 -.74756D-02  .86500D+07
7123  9.87  3  1  4.00  .34552D-01  .67279D-01 -.15265D-01  .86932D-02  .16120D+08
7123  5.88  3  1  4.00  .59819D-01  .10271D+00  .16389D-01  .72090D-01  .21760D+08
7123  9.88  3  1  4.00  .53890D-01  .10277D+00 -.54359D-01 -.21006D-01  .24220D+08
7124  9.86  4  0  4.00  .15104D-01  .51339D-01 -.13762D-01 -.16639D-01  .86500D+07
7124  9.87  4  0  4.00  .36093D-01  .68843D-01 -.17848D-02  .12151D-01  .16120D+08
7124  5.88  4  0  4.00  .64932D-01  .12260D+00  .82557D-02  .31800D-01  .21760D+08
7124  9.88  4  0  4.00  .60387D-01  .11968D+00 -.22908D-01 -.64189D-02  .24220D+08
7125  9.86  5  1  4.00  .10648D-01  .26528D-01 -.83902D-02  .10606D-01  .86500D+07
7125  9.87  5  1  4.00  .29724D-01  .49831D-01  .10824D-03  .40232D-01  .16120D+08
7125  5.88  5  1  4.00  .55156D-01  .95962D-01 -.12476D-01  .46632D-01  .21760D+08
7125  9.88  5  1  4.00  .46510D-01  .79325D-01 -.27276D-01  .34980D-01  .24220D+08
```

```
7423  9.86  3  0  5.00  .27608D-01  .93166D-01 -.13336D-01 -.49758D-02  .86500D+07
7423  9.87  3  0  5.00  .25247D-01  .67418D-01 -.59741D-02  .74749D-02  .16120D+08
7423  5.88  3  0  5.00  .10355D+00  .22996D+00  .61216D-02  .65622D-01  .21760D+08
7423  9.88  3  0  5.00  .10084D+00  .22437D+00 -.23741D-01  .33293D-01  .24220D+08
7424  9.86  4  1  5.00  .38862D-01  .82055D-01  .39926D-02  .35933D-01  .86500D+07
7424  9.87  4  1  5.00  .60310D-01  .11278D+00 -.13922D-01  .32572D-01  .16120D+08
7424  5.88  4  1  5.00  .11404D+00  .19368D+00  .48029D-02  .88588D-01  .21760D+08
7424  9.88  4  1  5.00  .11812D+00  .21361D+00 -.81675D-01 -.49467D-02  .24220D+08
7425  9.86  5  0  5.00  .57536D-01  .15800D+00  .82953D-02  .26056D-01  .86500D+07
7425  9.87  5  0  5.00  .74915D-01  .16849D+00  .19362D-01  .44213D-01  .16120D+08
7425  5.88  5  0  5.00  .13111D+00  .28521D+00  .58574D-01  .13291D+00  .21760D+08
7425  9.88  5  0  5.00  .12834D+00  .28331D+00  .81892D-02  .67453D-01  .24220D+08
7426  9.86  6  1  5.00  .47936D-01  .10264D+00  .91033D-02  .38657D-01  .86500D+07
7426  9.87  6  1  5.00  .63267D-01  .12733D+00 -.78206D-02  .23541D-01  .16120D+08
7426  5.88  6  1  5.00  .12047D+00  .22067D+00 -.90888D-02  .69630D-01  .21760D+08
7426  9.88  6  1  5.00  .11223D+00  .21443D+00 -.54757D-01  .16394D-01  .24220D+08
6101  9.86  1  0  0.00  .15912D-01  .44977D-01  .10788D-01  .14578D-01  .11720D+08
6101  9.87  1  0  0.00  .28133D-01  .55505D-01 -.43071D-01  .15337D-02  .22100D+08
6101  5.88  1  0  0.00  .43112D-01  .84154D-01 -.43048D-01  .50759D-02  .29770D+08
6101  9.88  1  0  0.00  .41992D-01  .91009D-01 -.90428D-01 -.69335D-01  .33250D+08
6102  9.86  2  0  0.00  .20059D-01  .51993D-01  .18272D-01  .27582D-01  .11720D+08
6102  9.87  2  0  0.00  .12499D-01  .27143D-01 -.26567D-01  .44184D-02  .22100D+08
6102  5.88  2  0  0.00  .47785D-01  .90811D-01 -.42129D-03  .25439D-01  .29770D+08
6102  9.88  2  0  0.00  .41226D-01  .90018D-01 -.68651D-01 -.43280D-01  .33250D+08
```



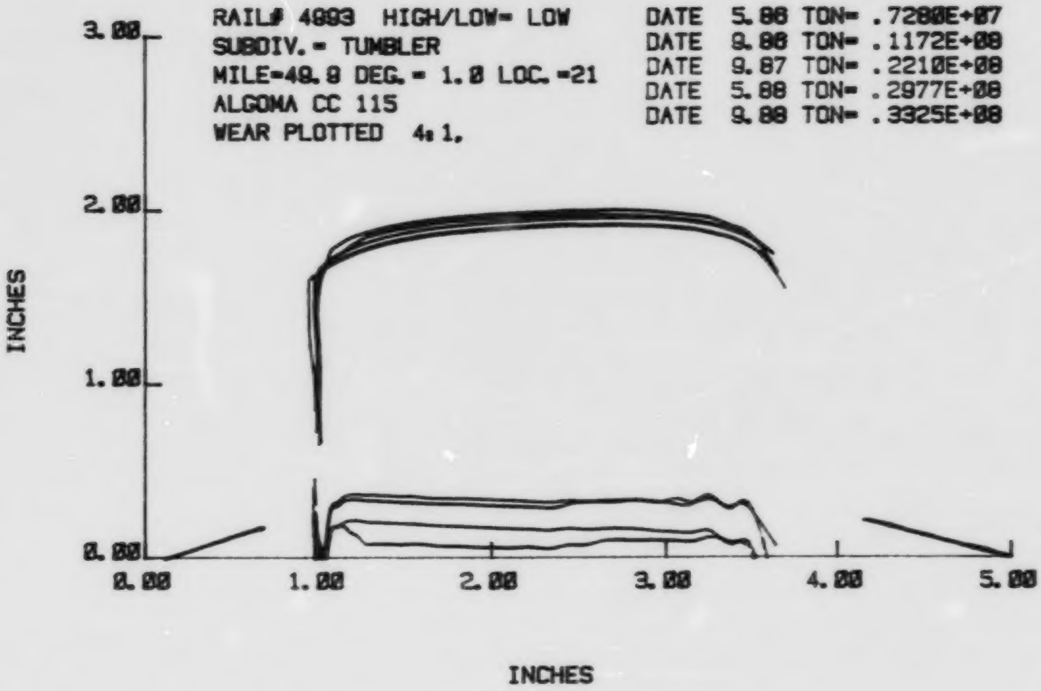
RAIL# 4991 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=48.9 DEG. = 1.0 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4: 1.

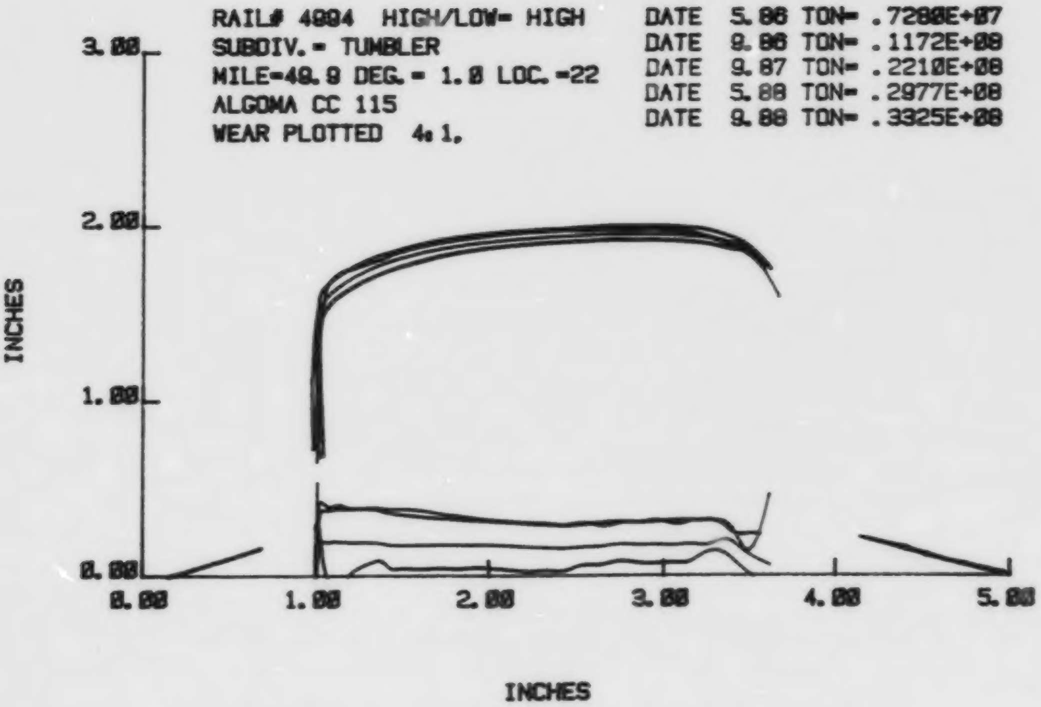
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08

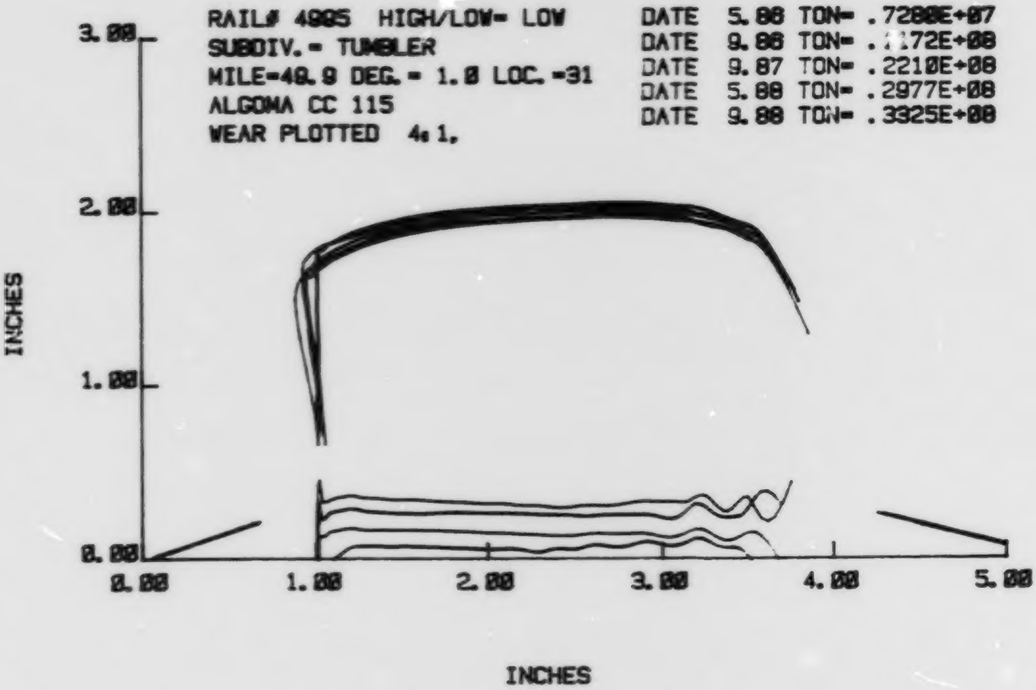


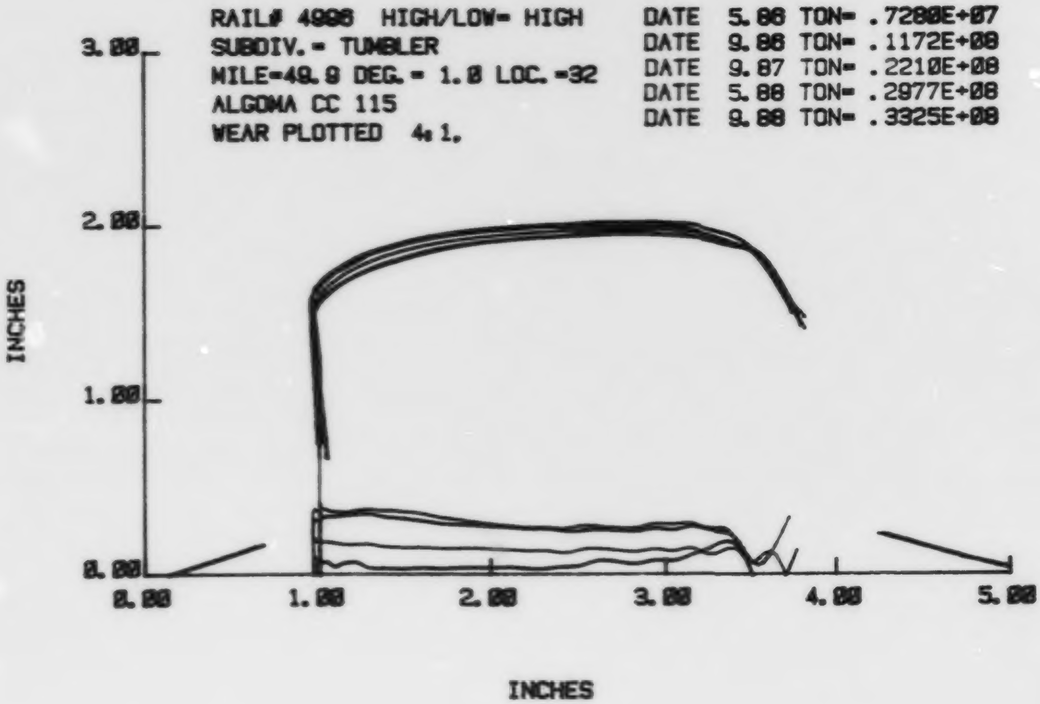
RAIL# 4992 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=48.9 DEG. = 1.0 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4: 1.

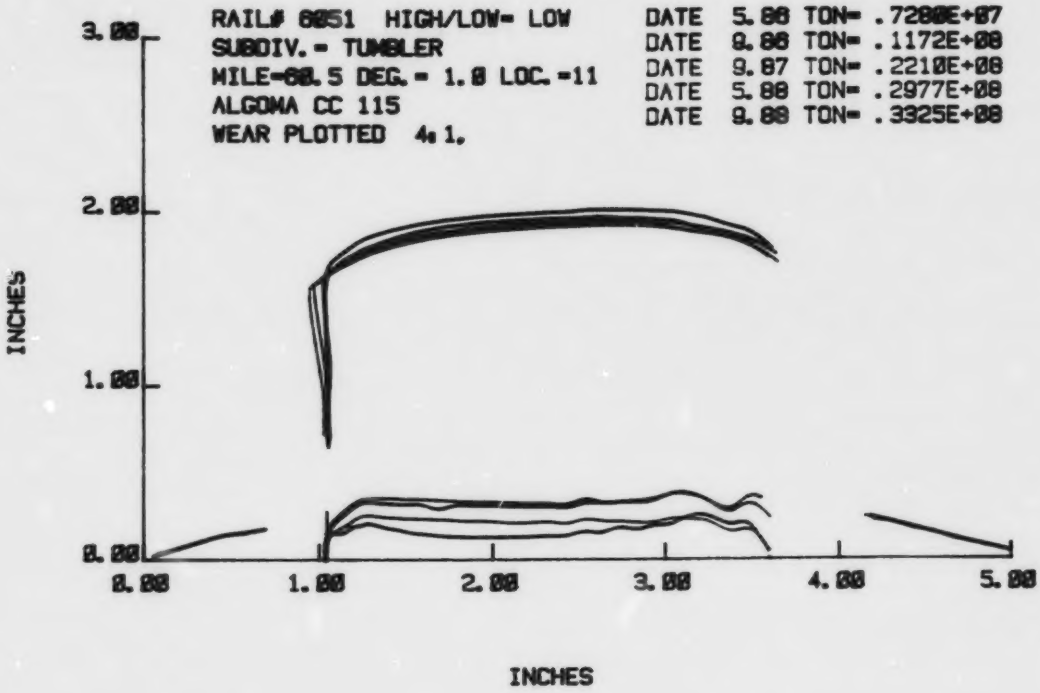
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08

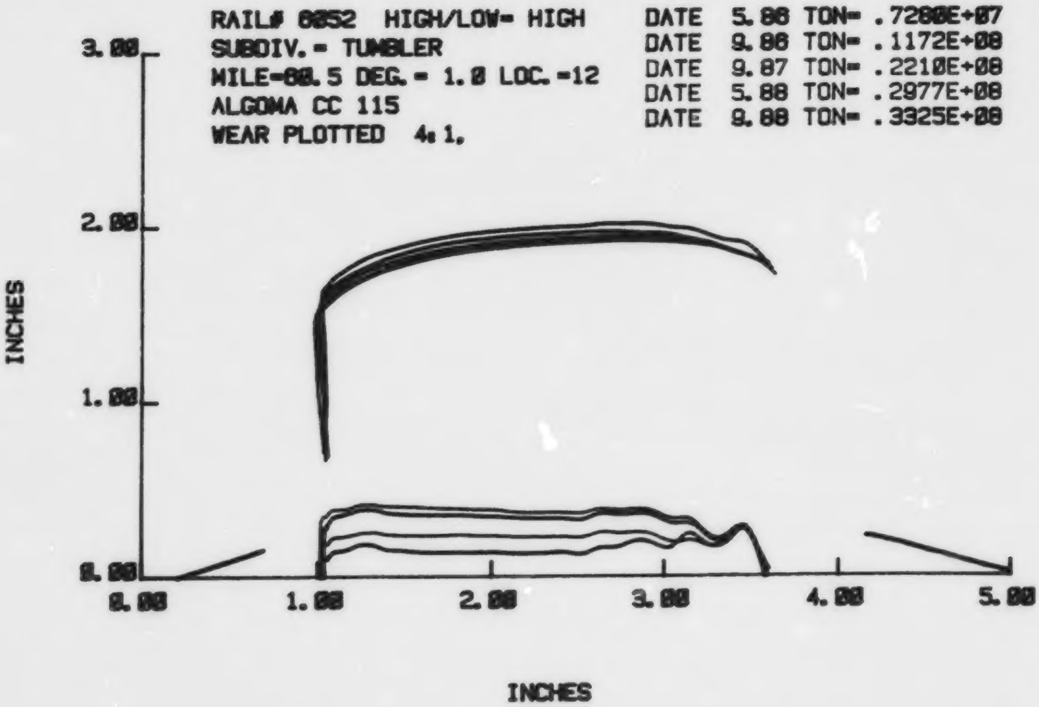

RAIL# 4093 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=49.9 DEG.= 1.0 LOC.=21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

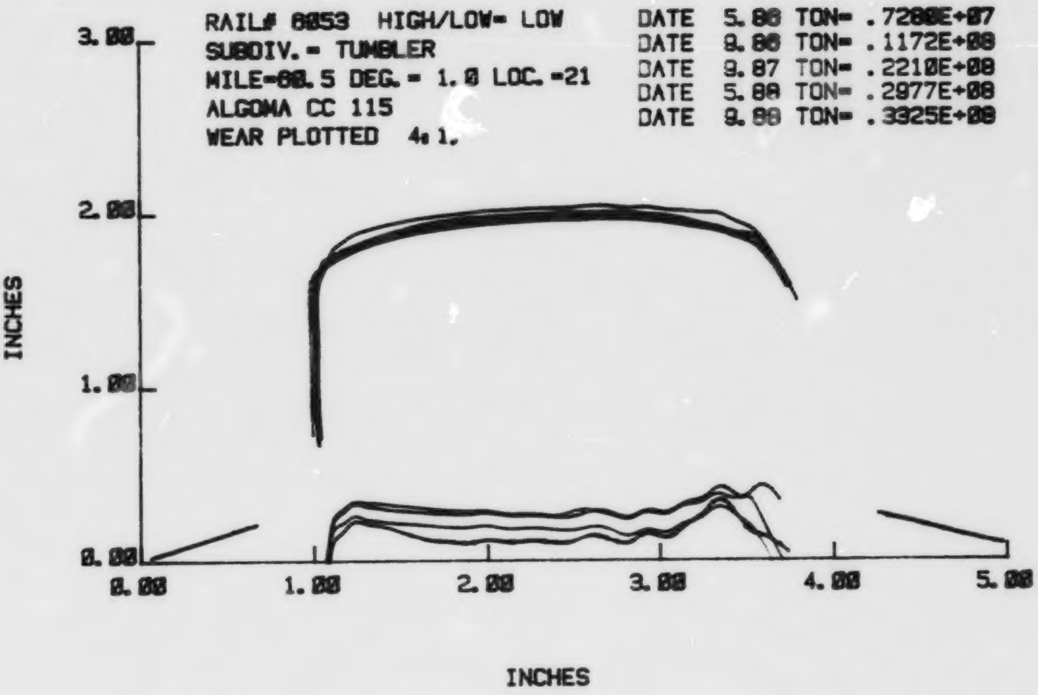

RAIL# 4094 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=49.9 DEG.= 1.0 LOC.=22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

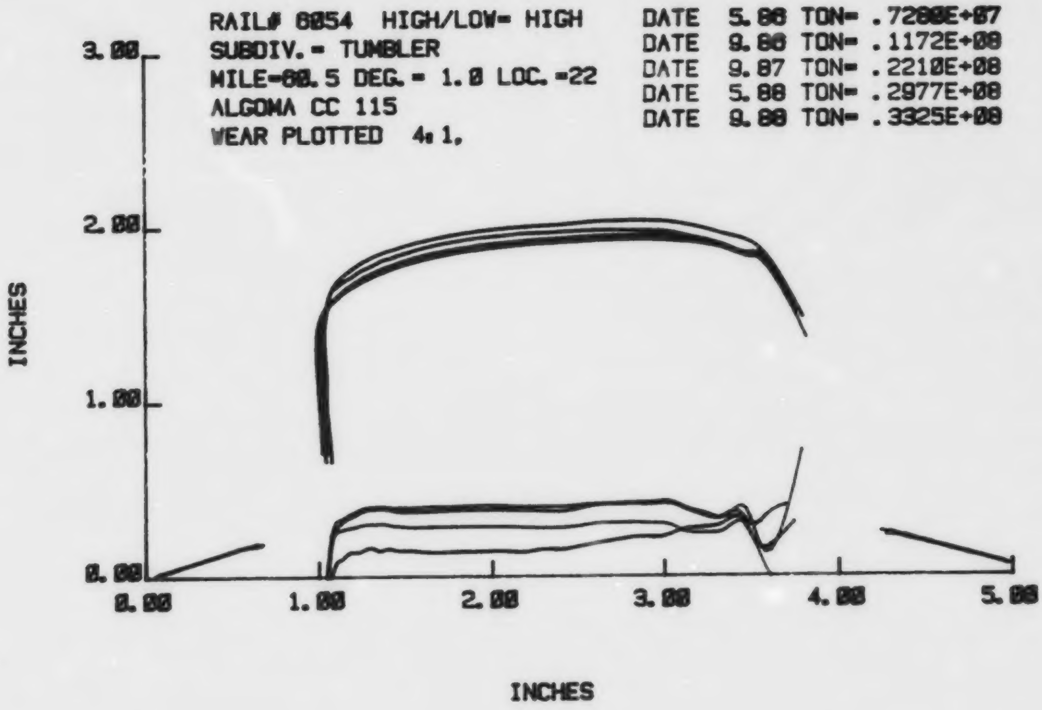

RAIL# 4995 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=40.9 DEG. = 1.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

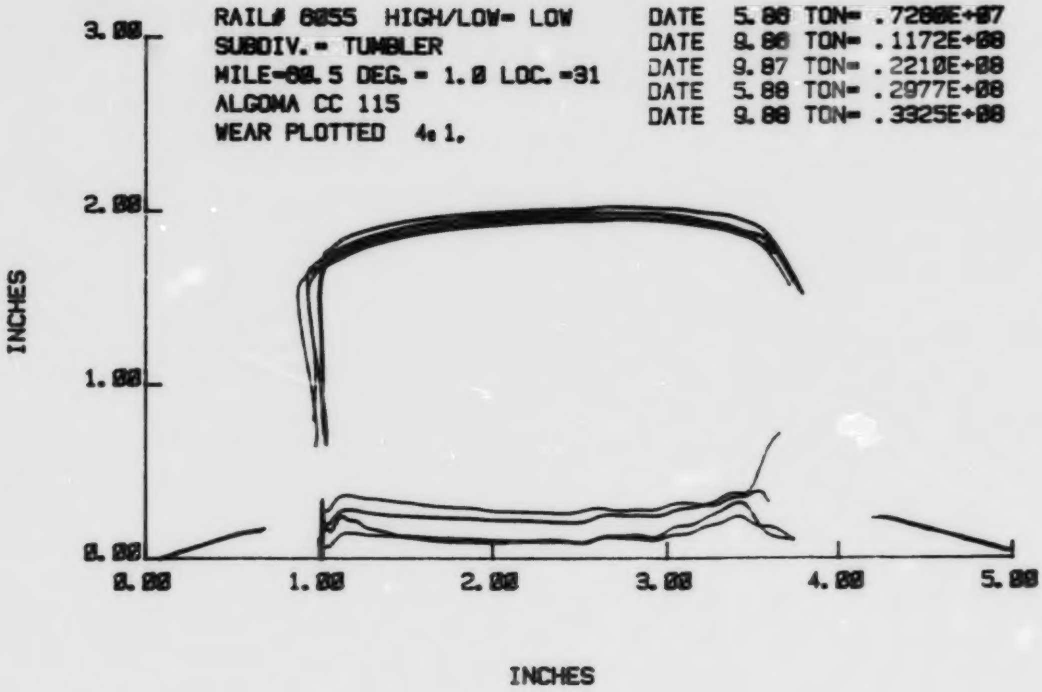

RAIL# 4996 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=40.9 DEG. = 1.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

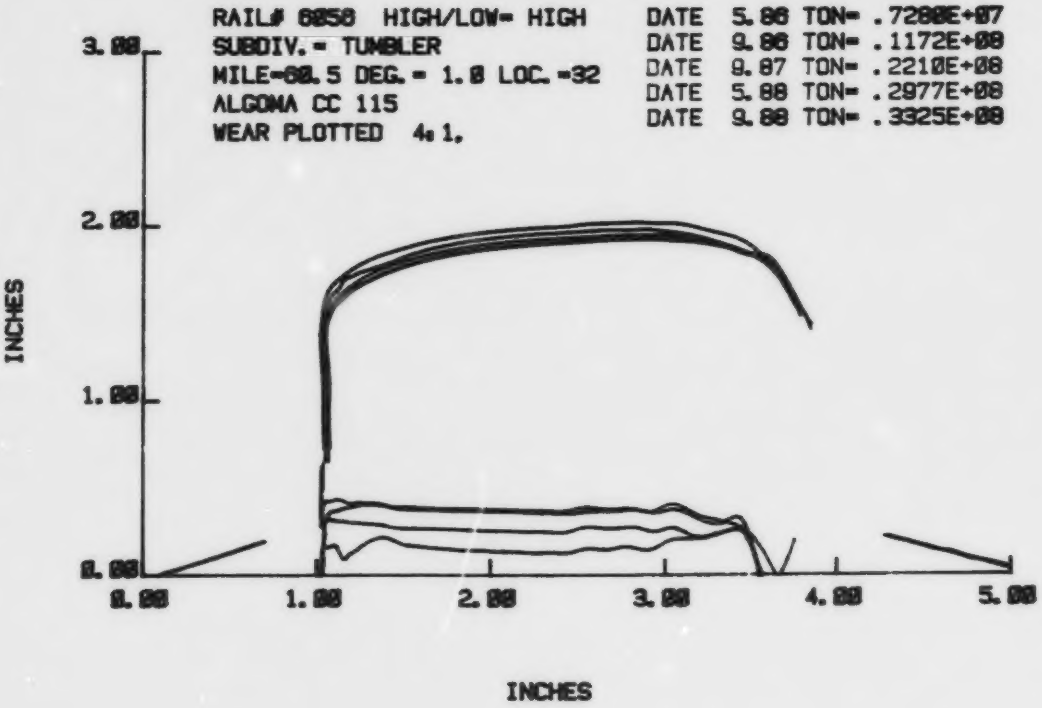

RAIL# 6051 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=60.5 DEG.= 1.0 LOC.=11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

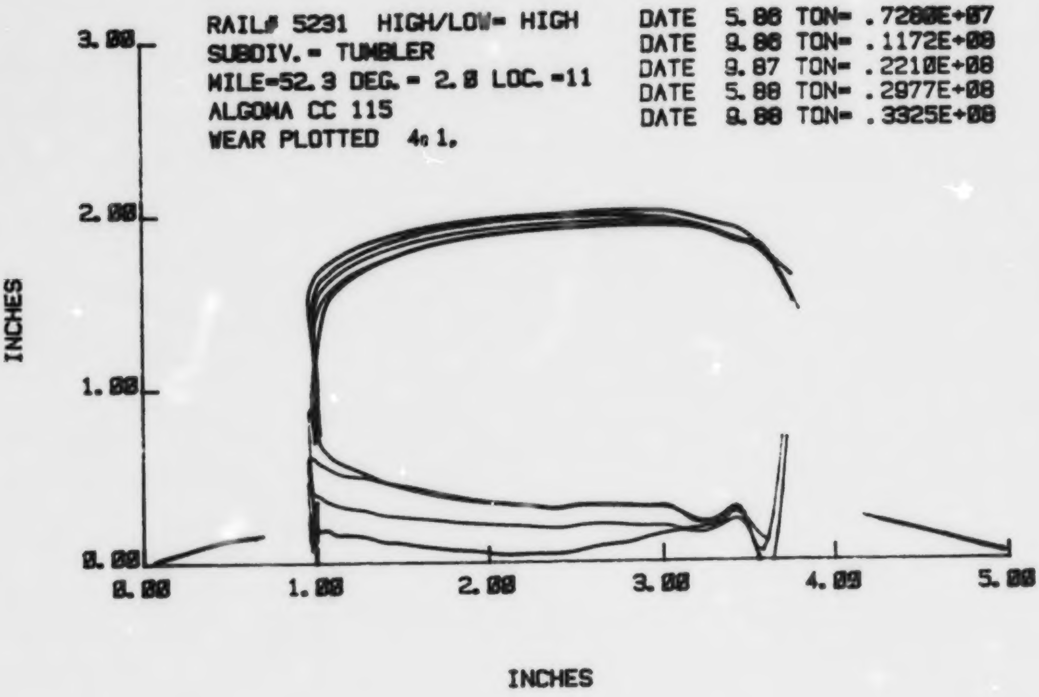

RAIL# 6052 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=60.5 DEG.= 1.0 LOC.=12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

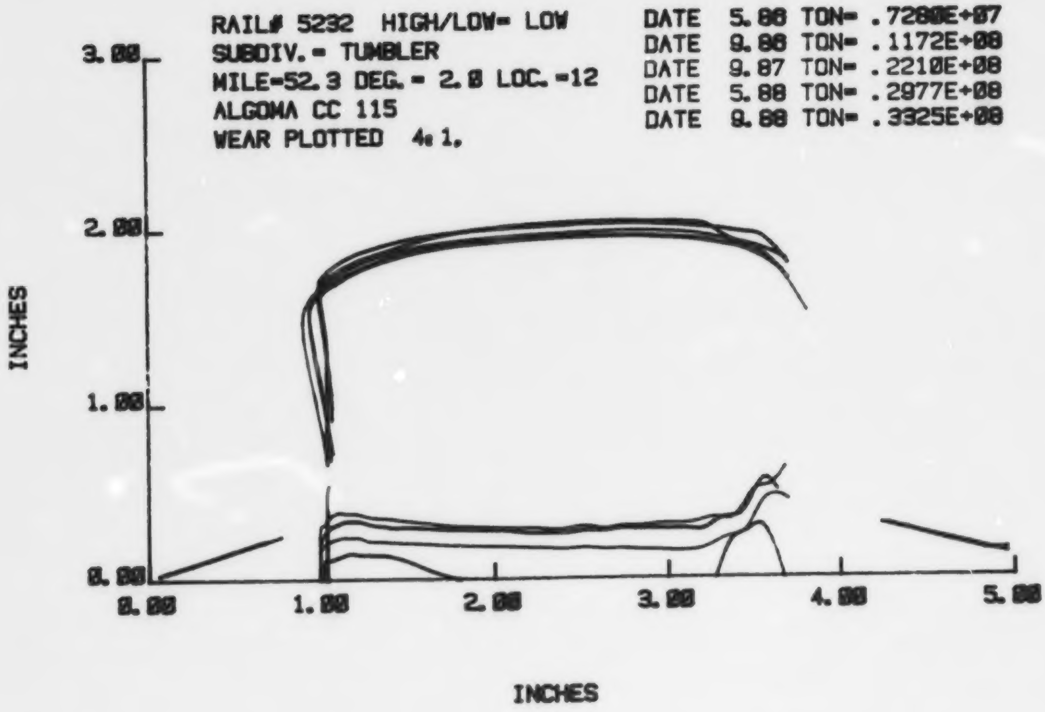

RAIL# 6053 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=60.5 DEG. = 1.0 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .7200E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

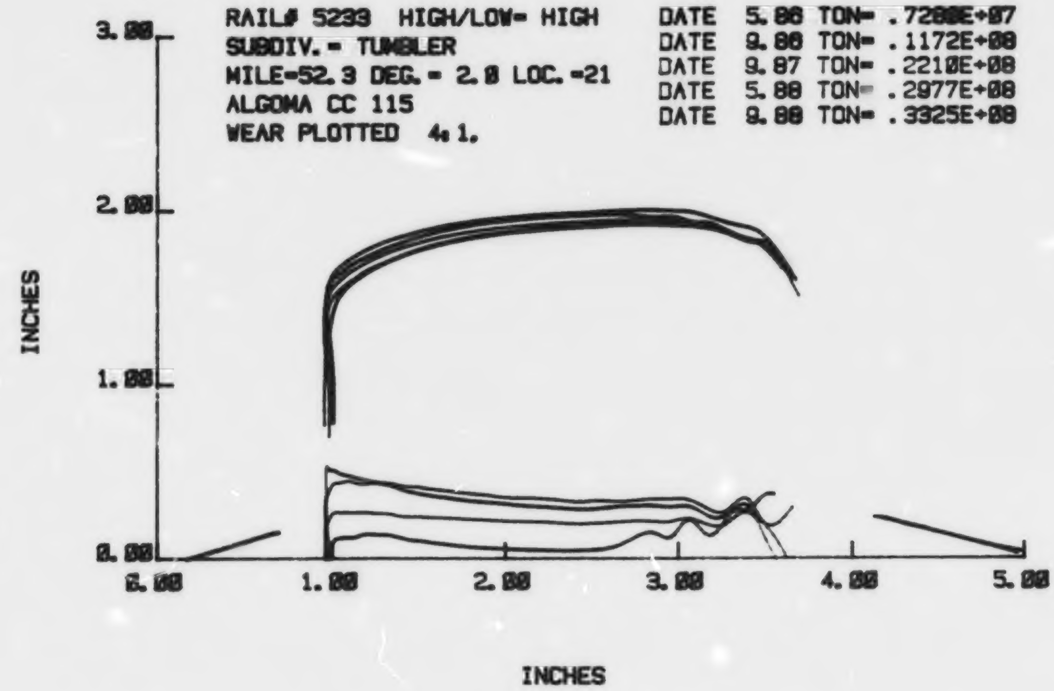

RAIL# 6054 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=60.5 DEG. = 1.0 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .7200E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

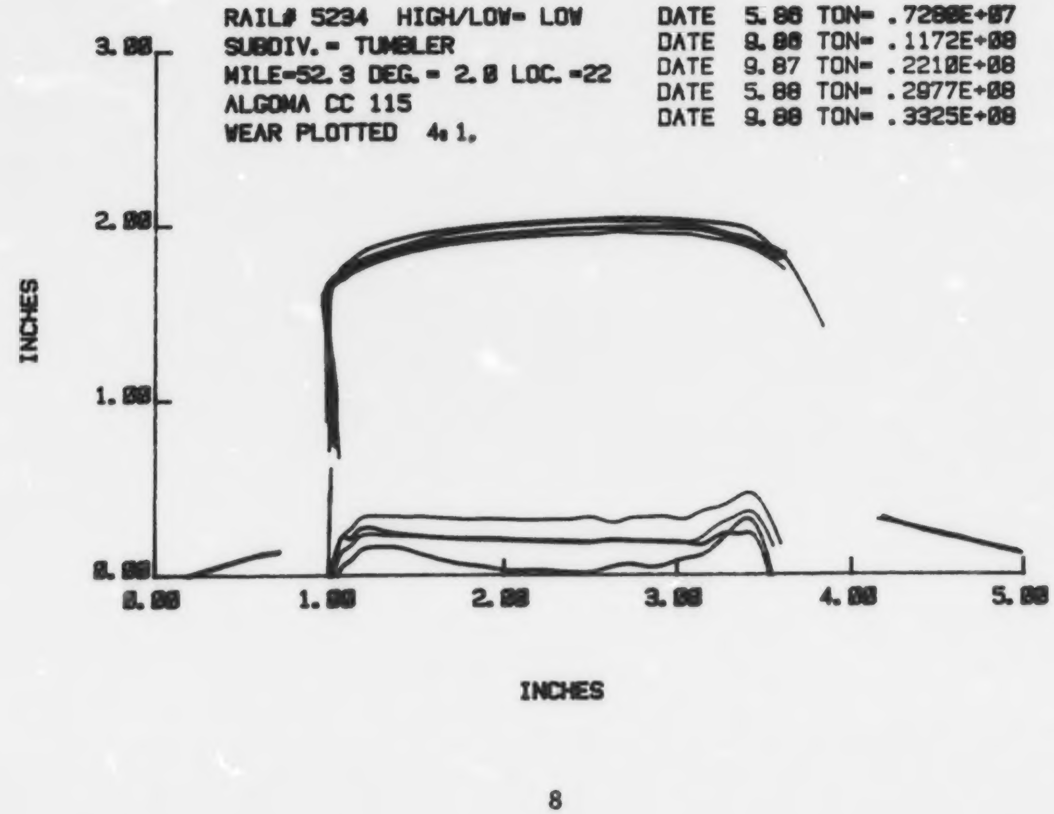

RAIL# 6055 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=60.5 DEG.= 1.0 LOC.=31
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

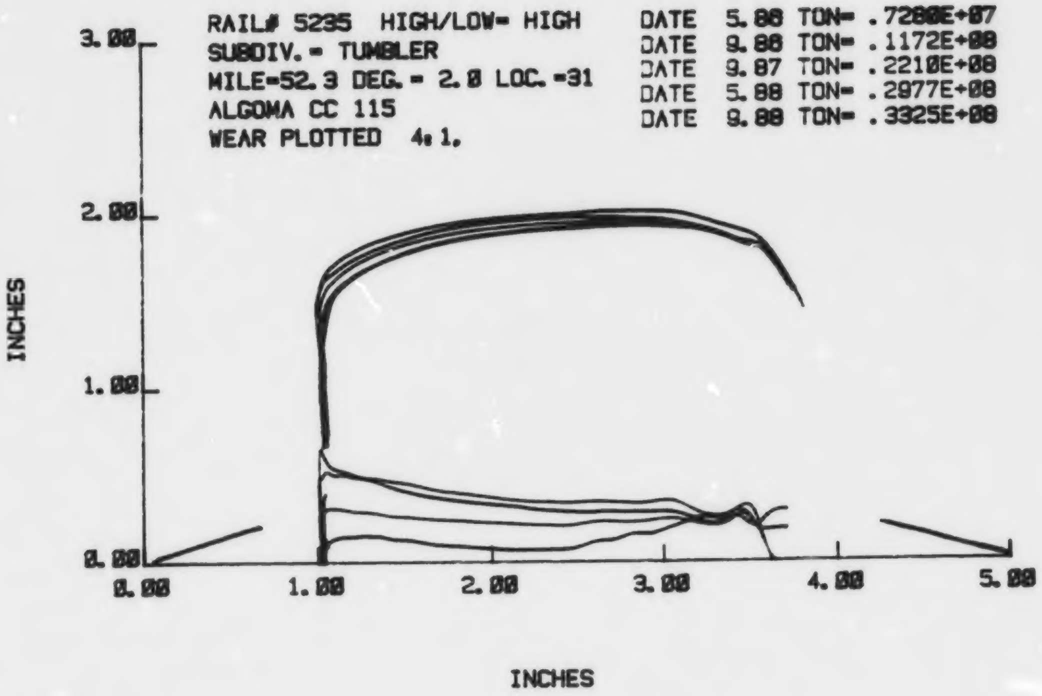

RAIL# 6058 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=60.5 DEG.= 1.0 LOC.=32
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

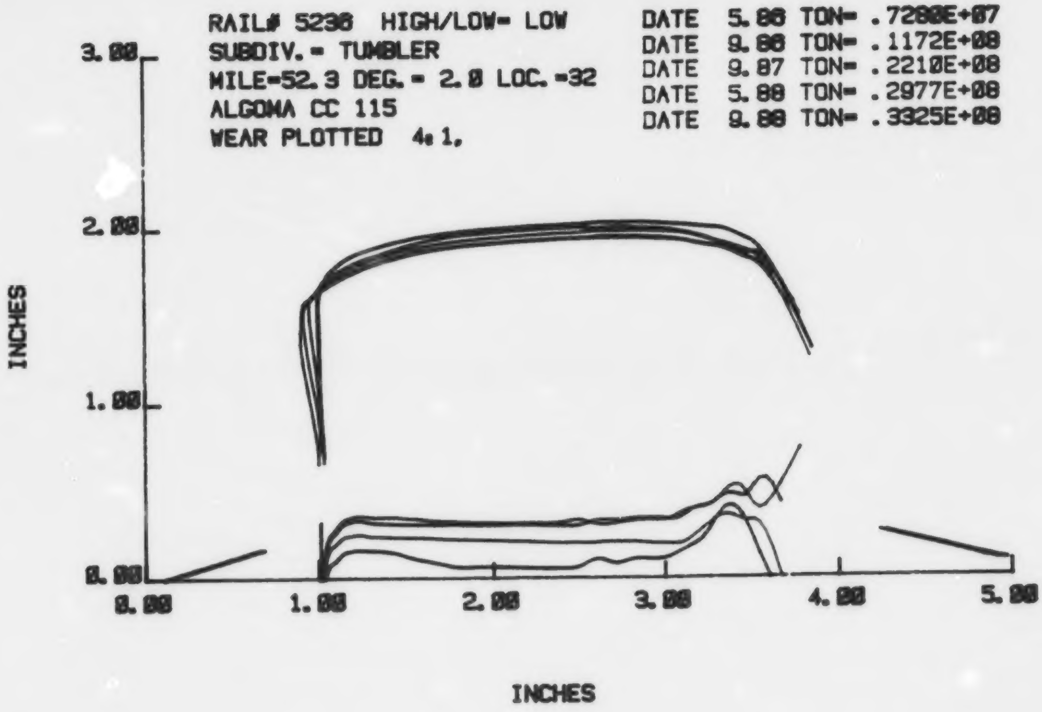

RAIL# 5231 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=52.3 DEG. = 2.0 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

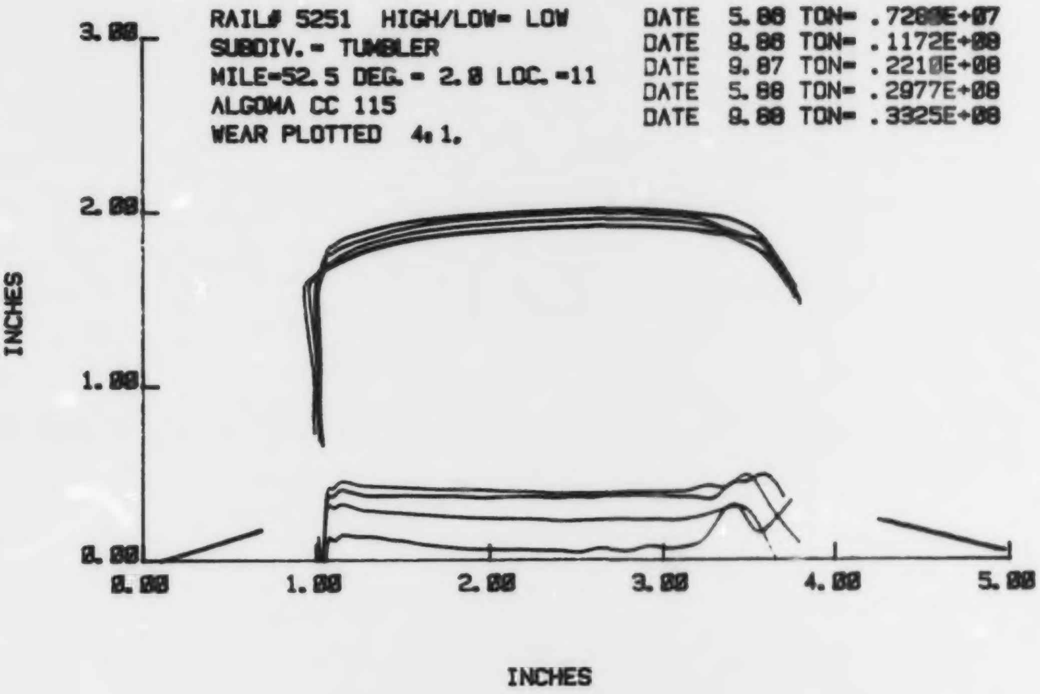

RAIL# 5232 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=52.3 DEG. = 2.0 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

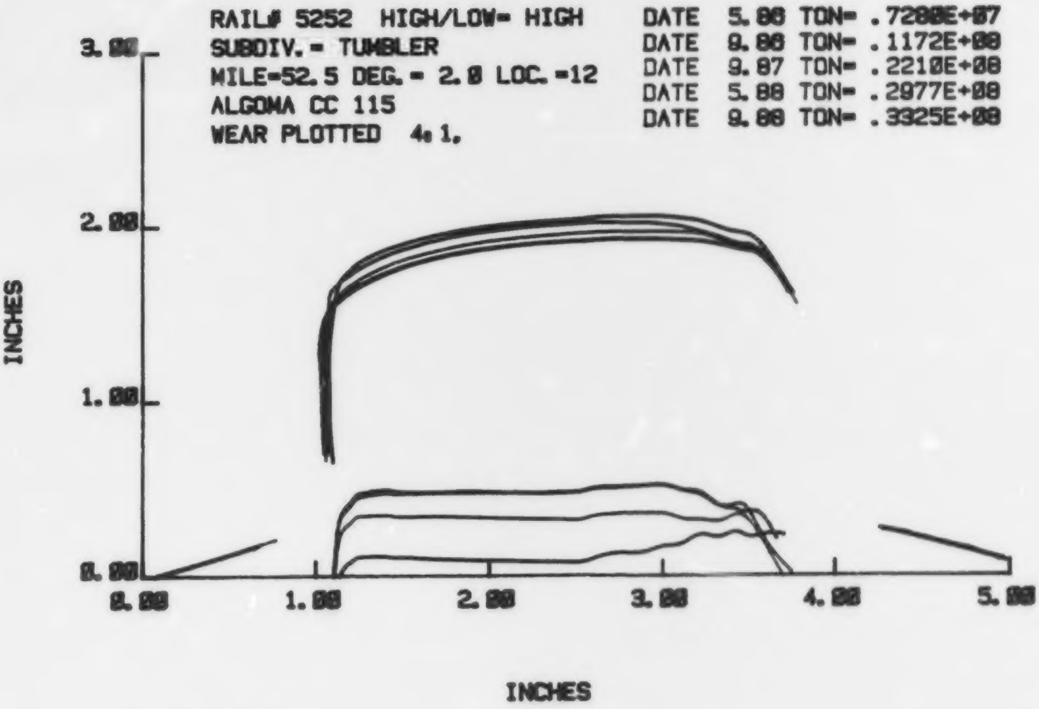

RAIL# 5233 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=52.3 DEG. = 2.0 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

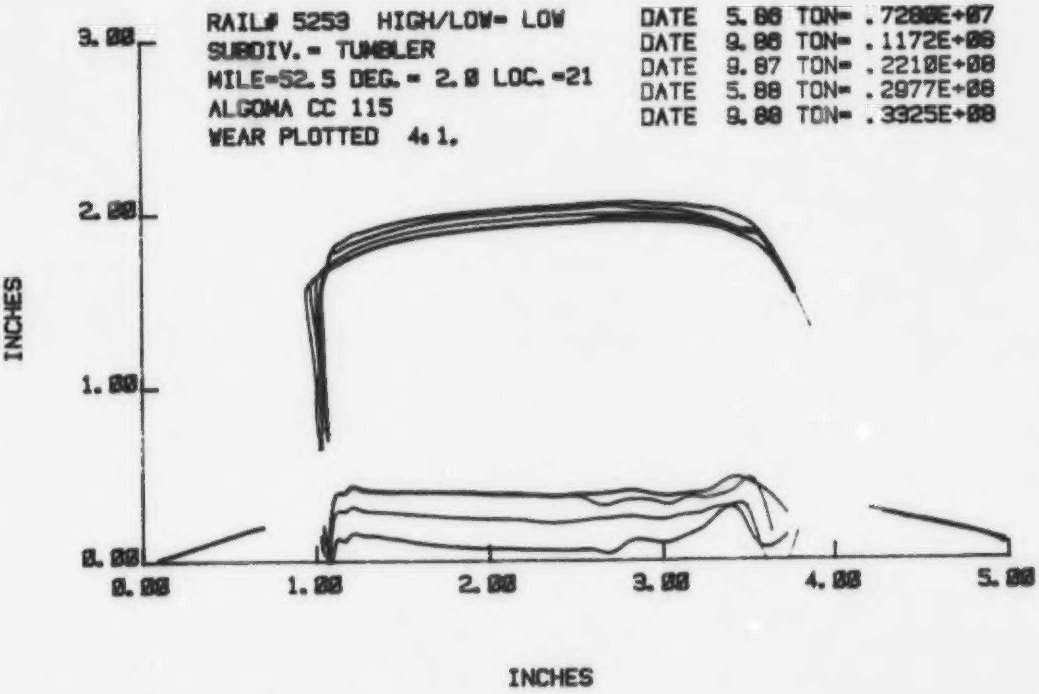

RAIL# 5234 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=52.3 DEG. = 2.0 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

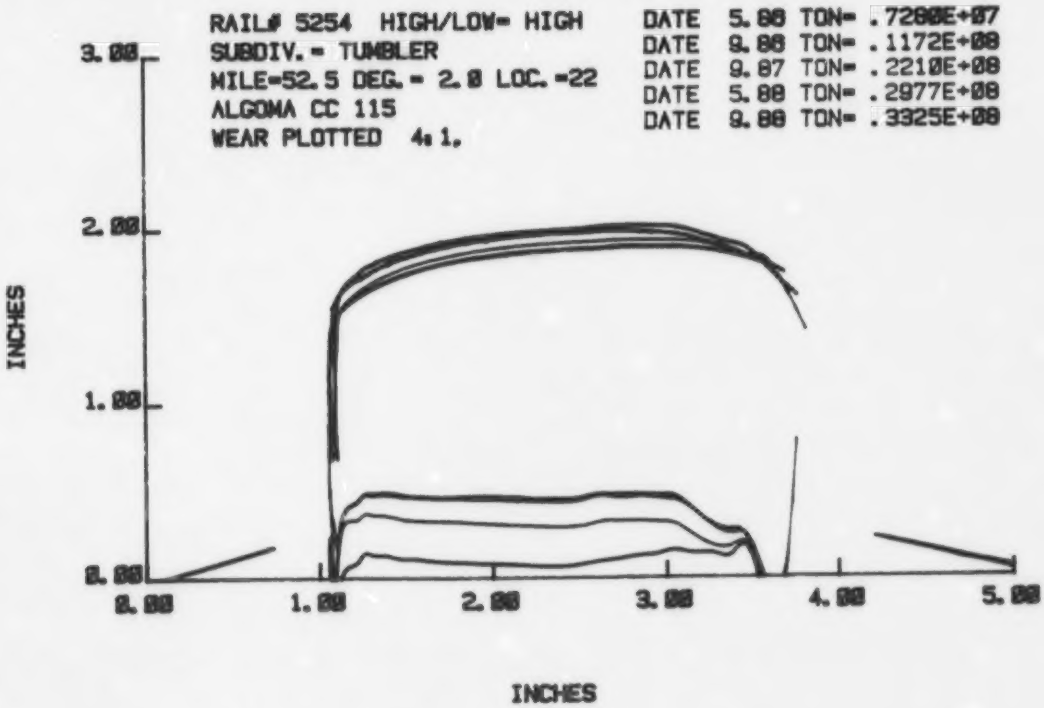

RAIL# 5235 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=52.3 DEG. = 2.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

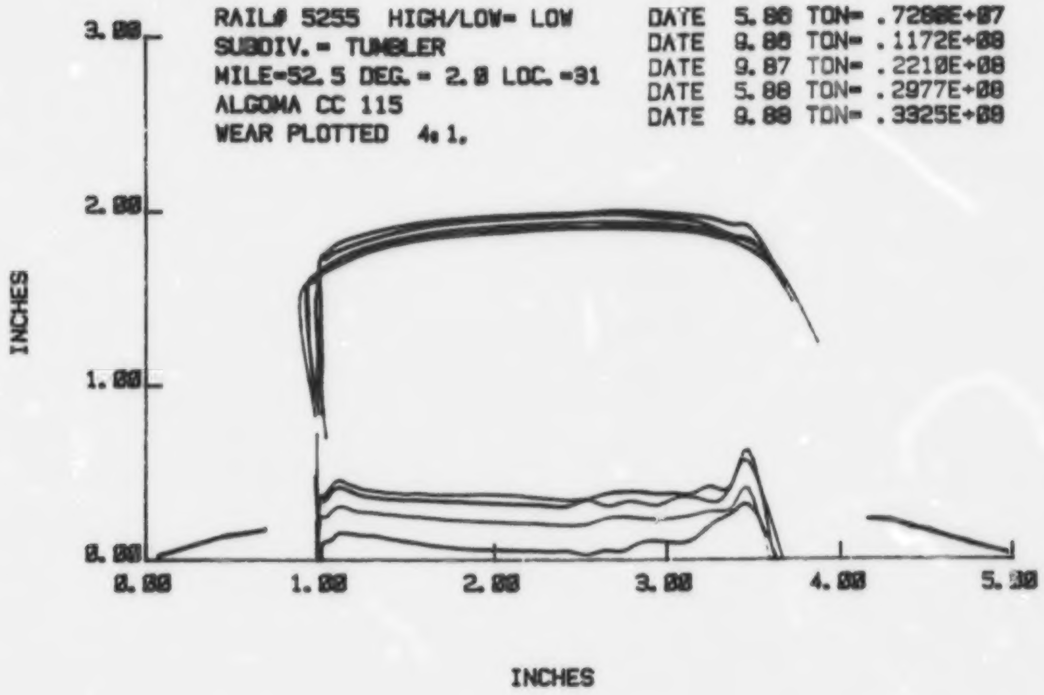

RAIL# 5236 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=52.3 DEG. = 2.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

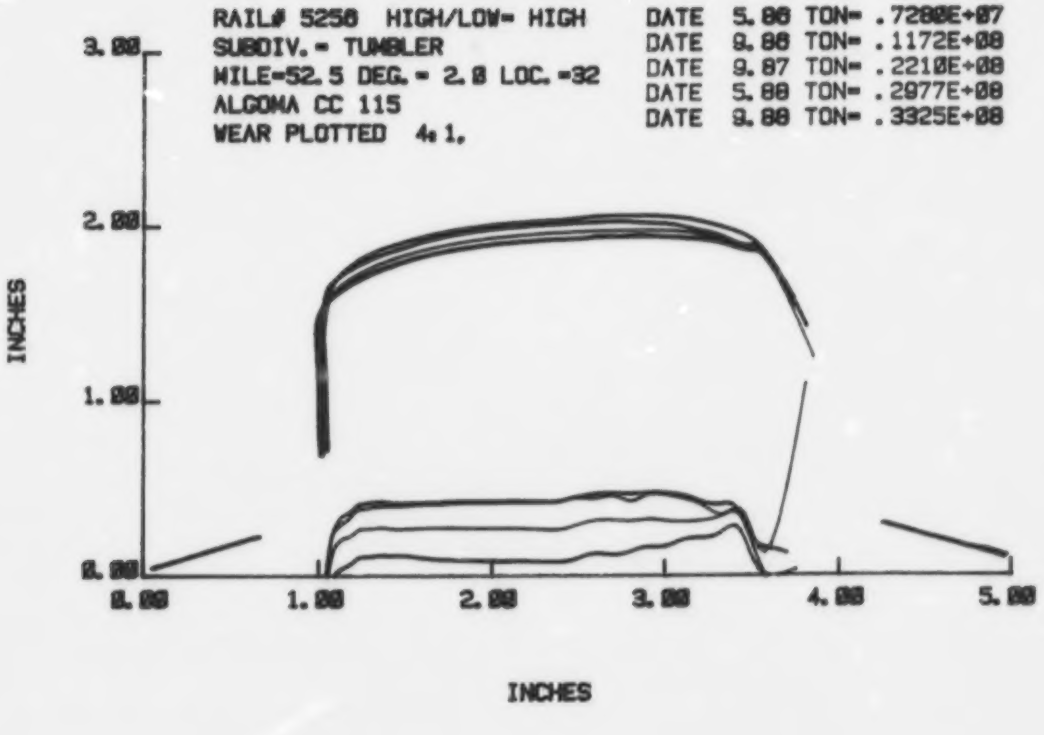

RAIL# 5251 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=52.5 DEG.= 2.0 LOC.=11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

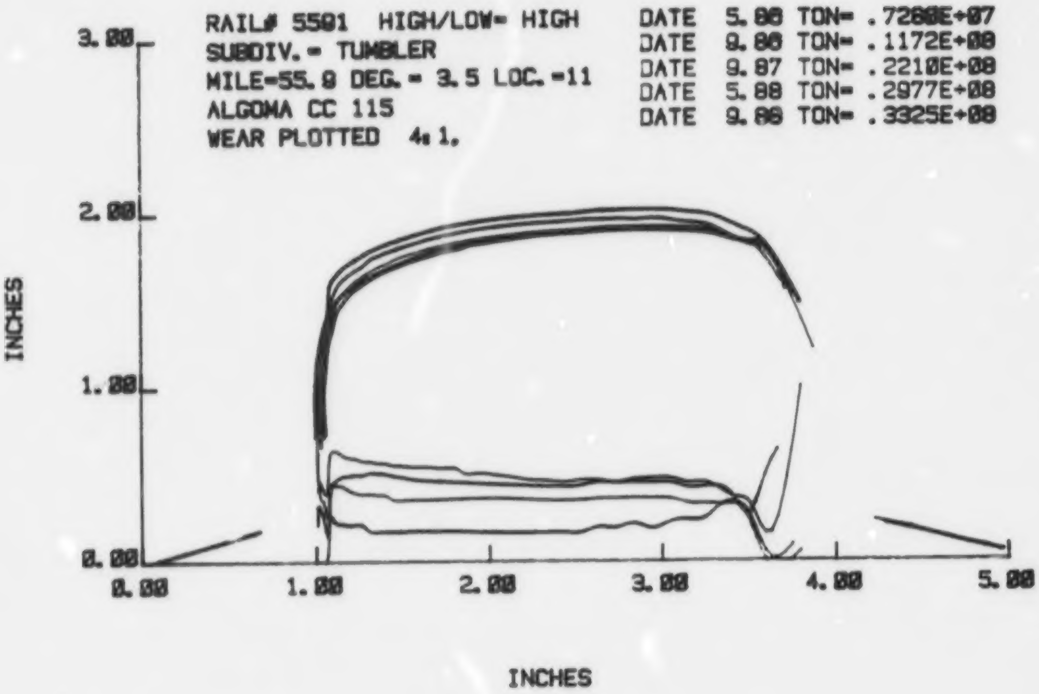

RAIL# 5252 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=52.5 DEG.= 2.0 LOC.=12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

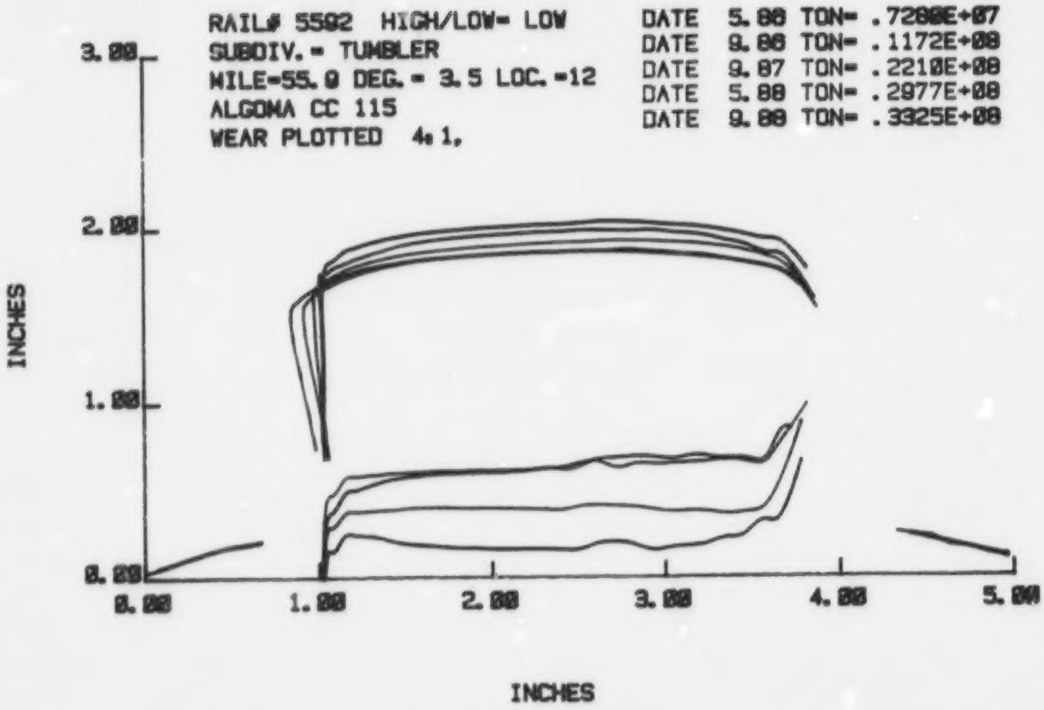

RAIL# 5253 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=52.5 DEG.= 2.0 LOC.=21
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.88 TON= .7280E+07
DATE 9.88 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

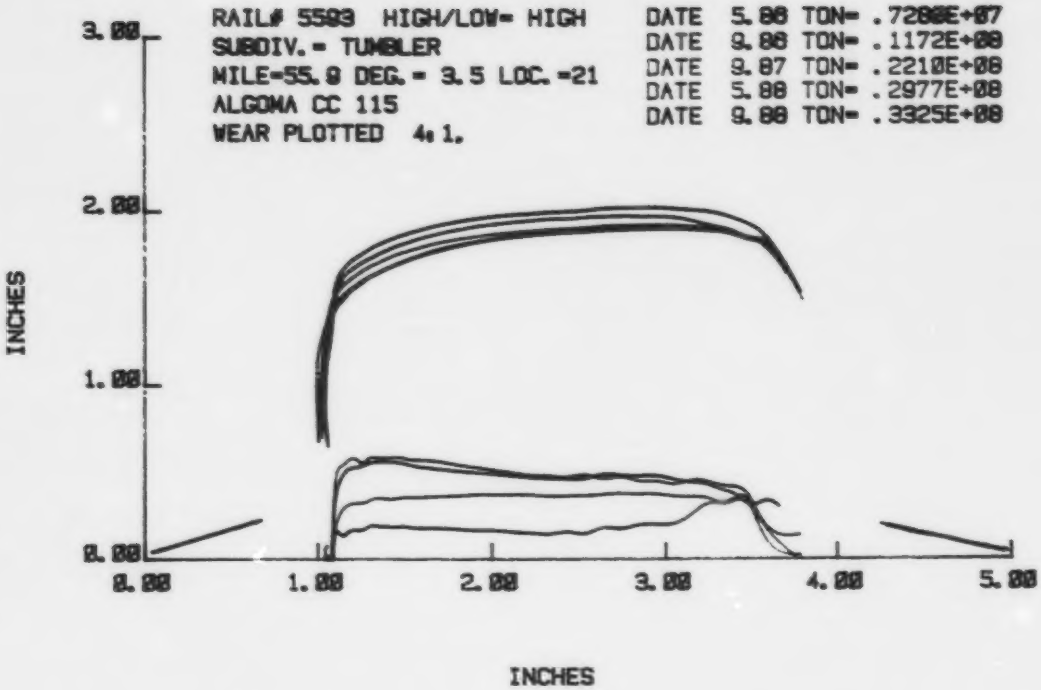

RAIL# 5254 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=52.5 DEG.= 2.0 LOC.=22
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.88 TON= .7280E+07
DATE 9.88 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

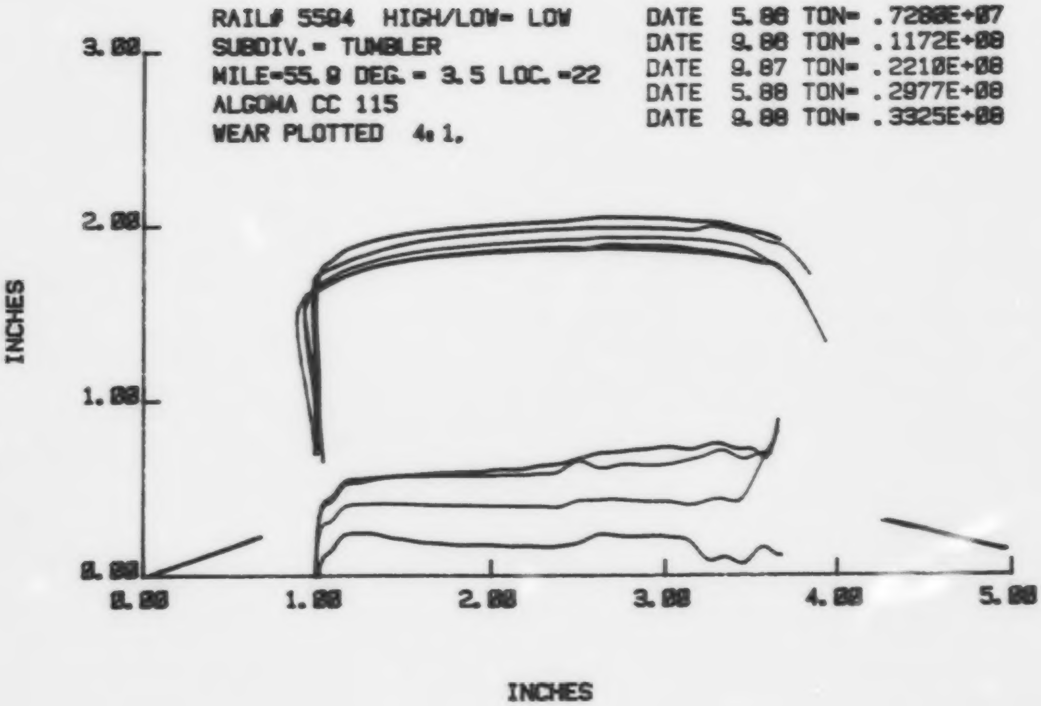

RAIL# 5255 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=52.5 DEG. = 2.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

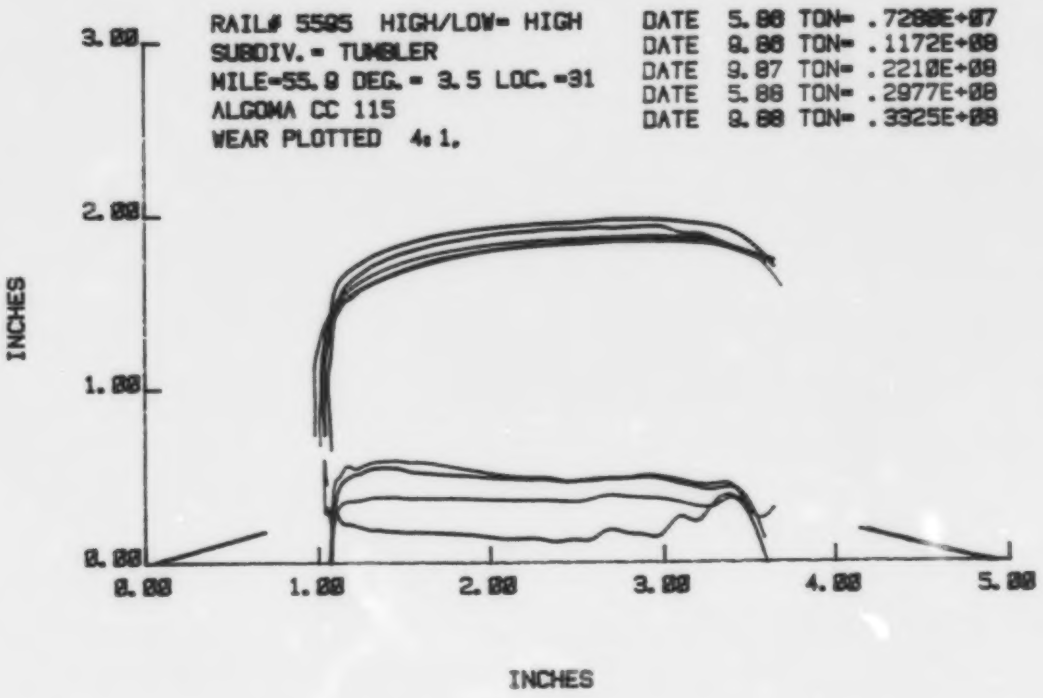

RAIL# 5256 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=52.5 DEG. = 2.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

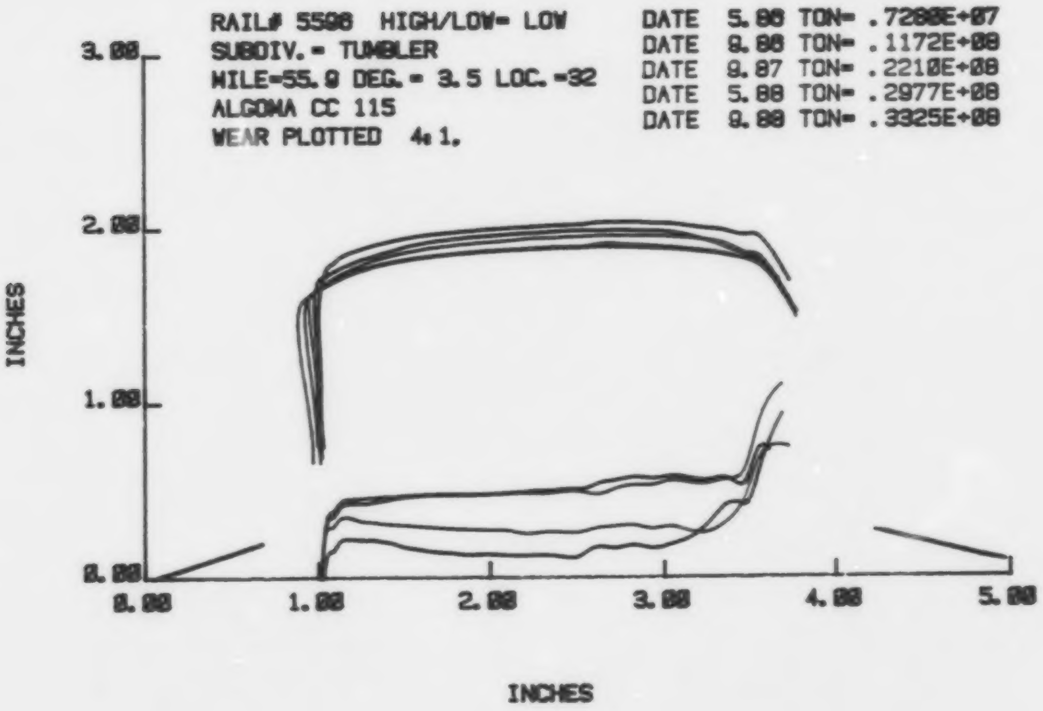

RAIL# 5501 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=55.9 DEG. = 3.5 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

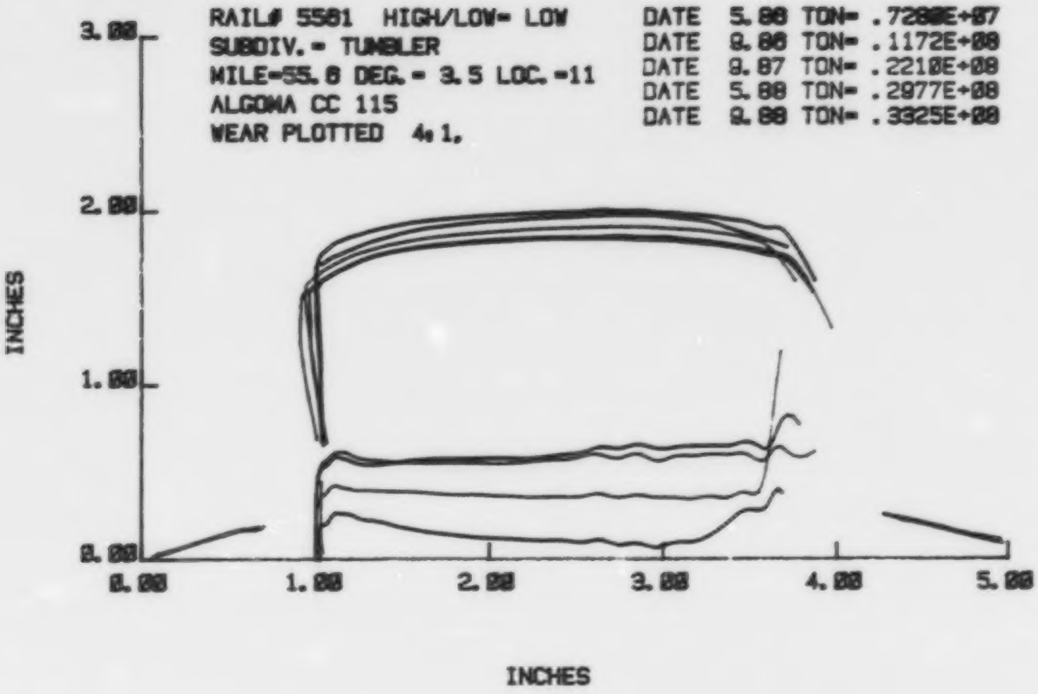

RAIL# 5502 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=55.9 DEG. = 3.5 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

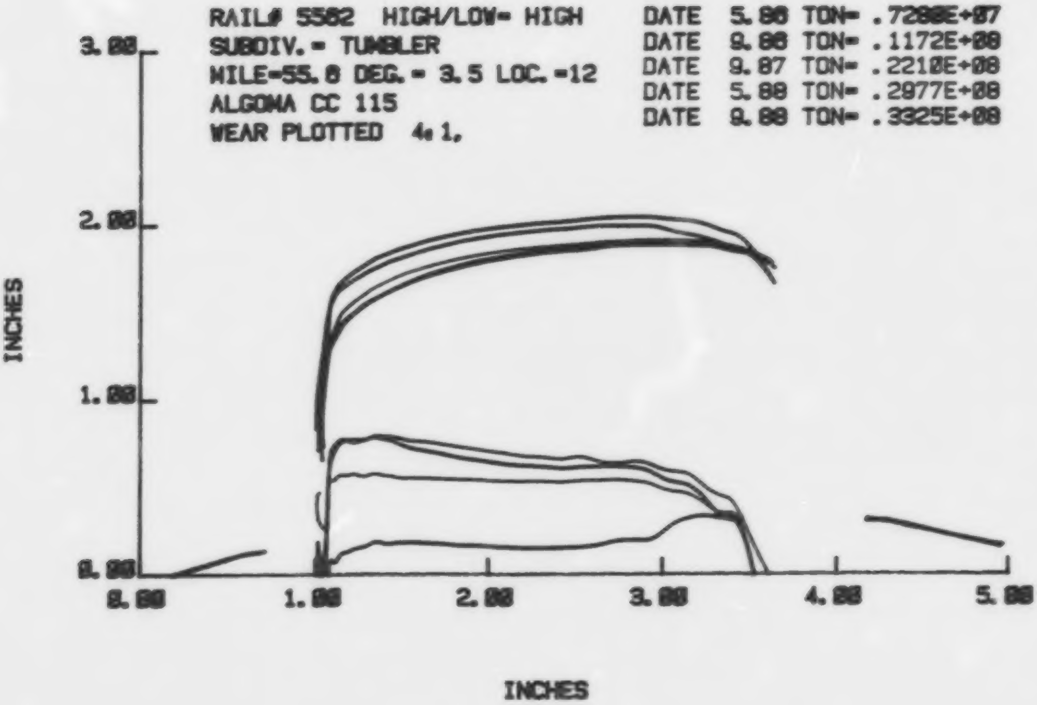

RAIL# 5593 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=55.9 DEG. = 3.5 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4. 1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

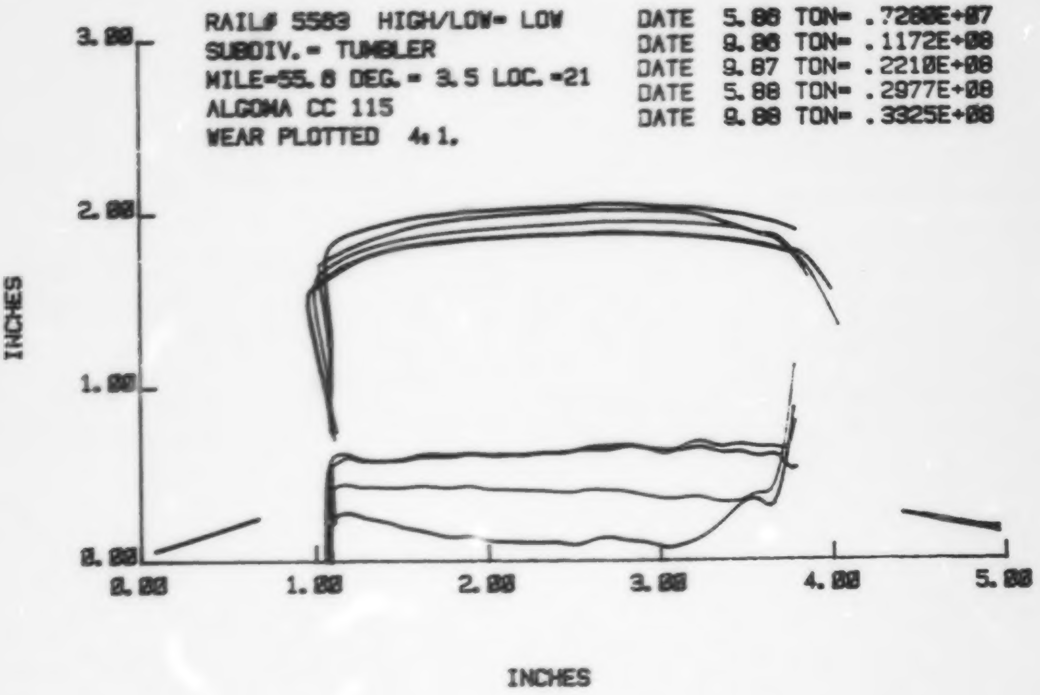

RAIL# 5594 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=55.9 DEG. = 3.5 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4. 1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

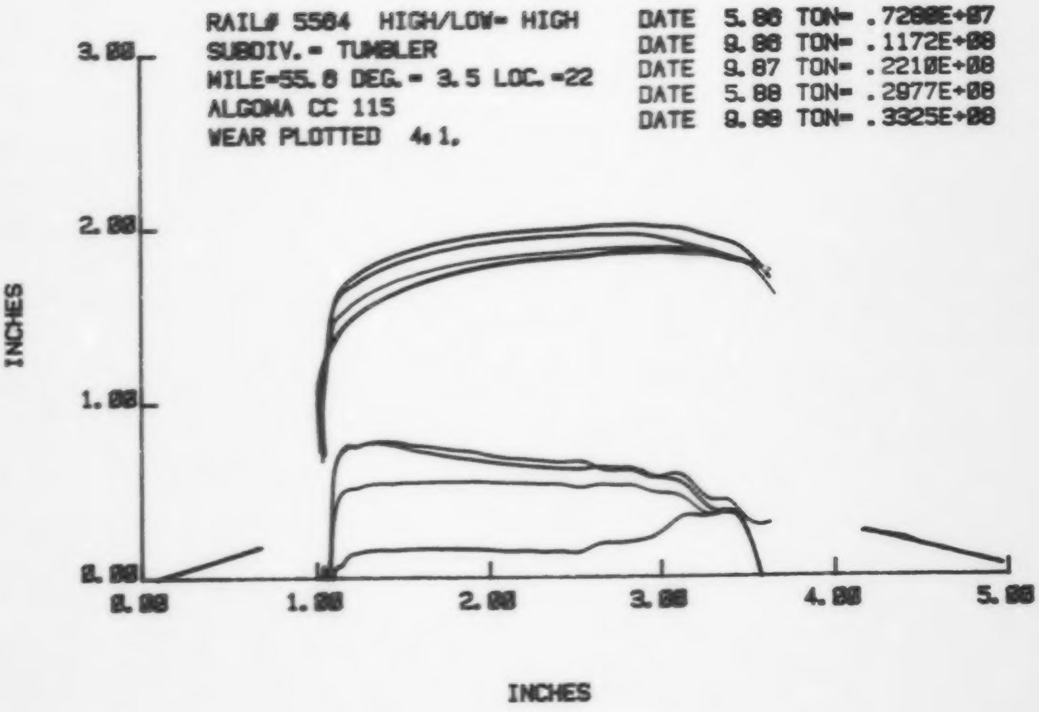

RAIL# 5595 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=55.8 DEG.= 3.5 LOC.=31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 8.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 8.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

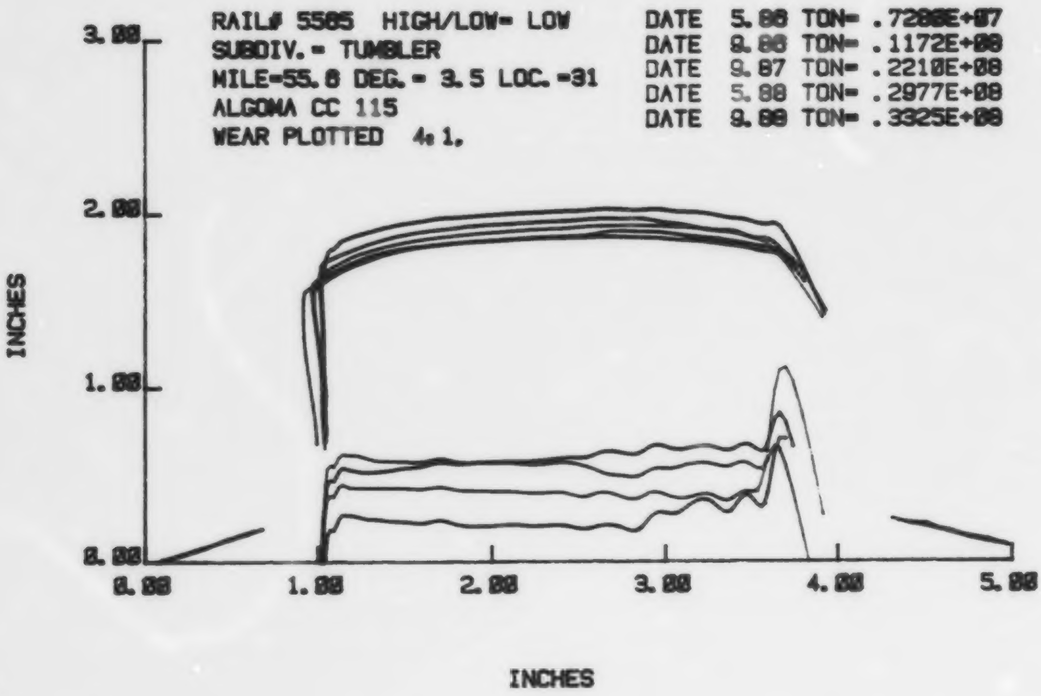

RAIL# 5598 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=55.8 DEG.= 3.5 LOC.=32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 8.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 8.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

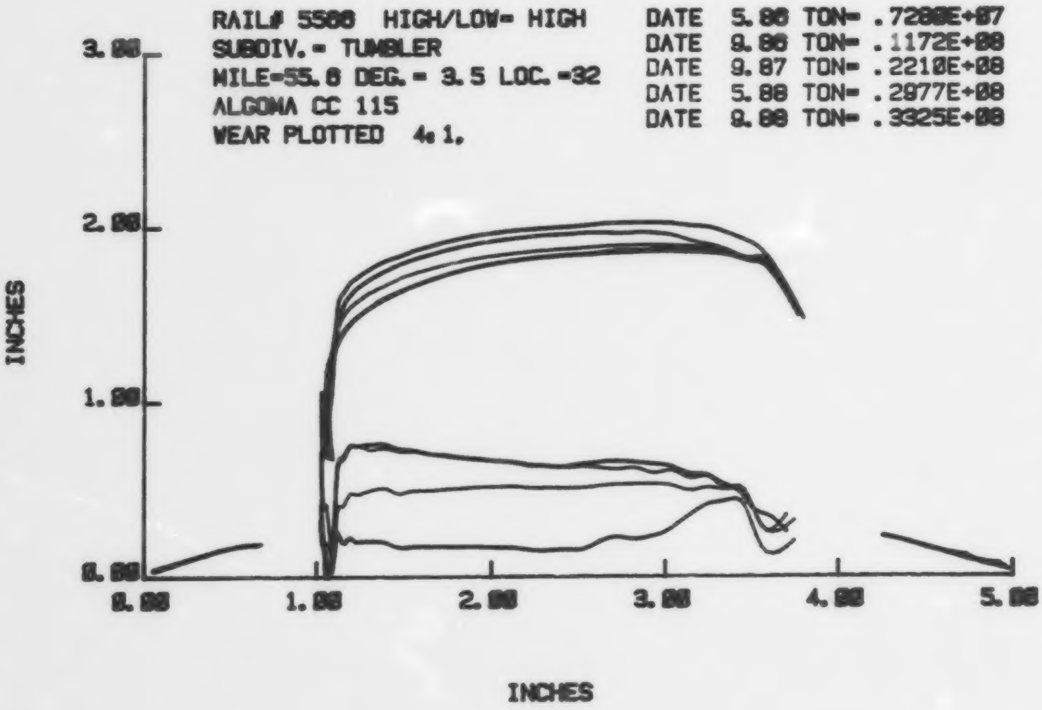

RAIL# 5501 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=55.6 DEG. = 3.5 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

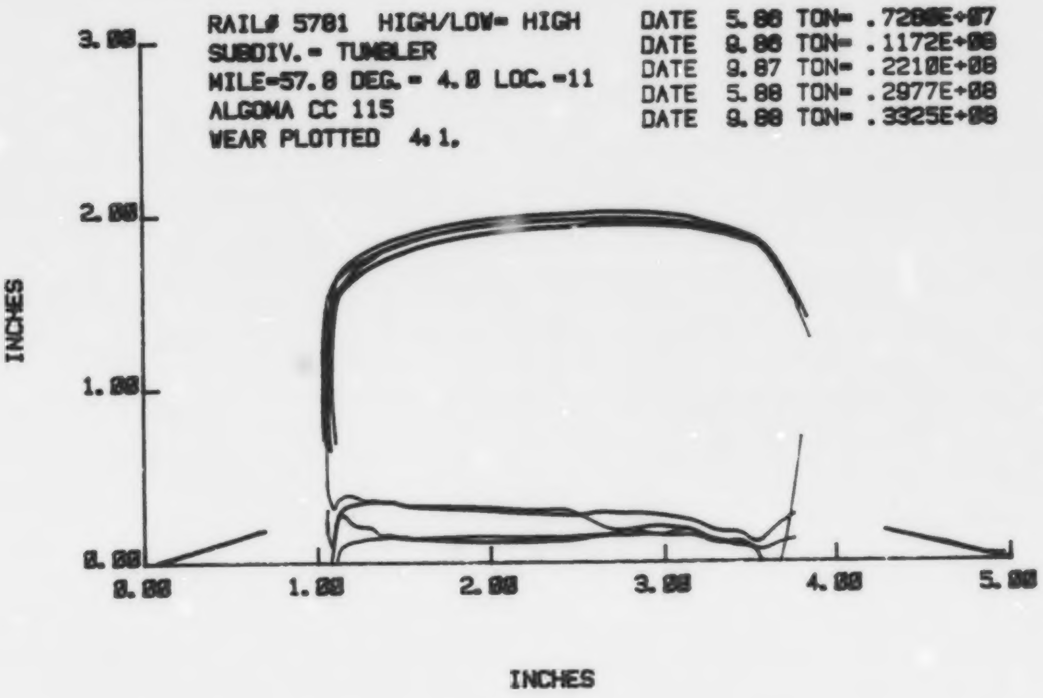

RAIL# 5502 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=55.6 DEG. = 3.5 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

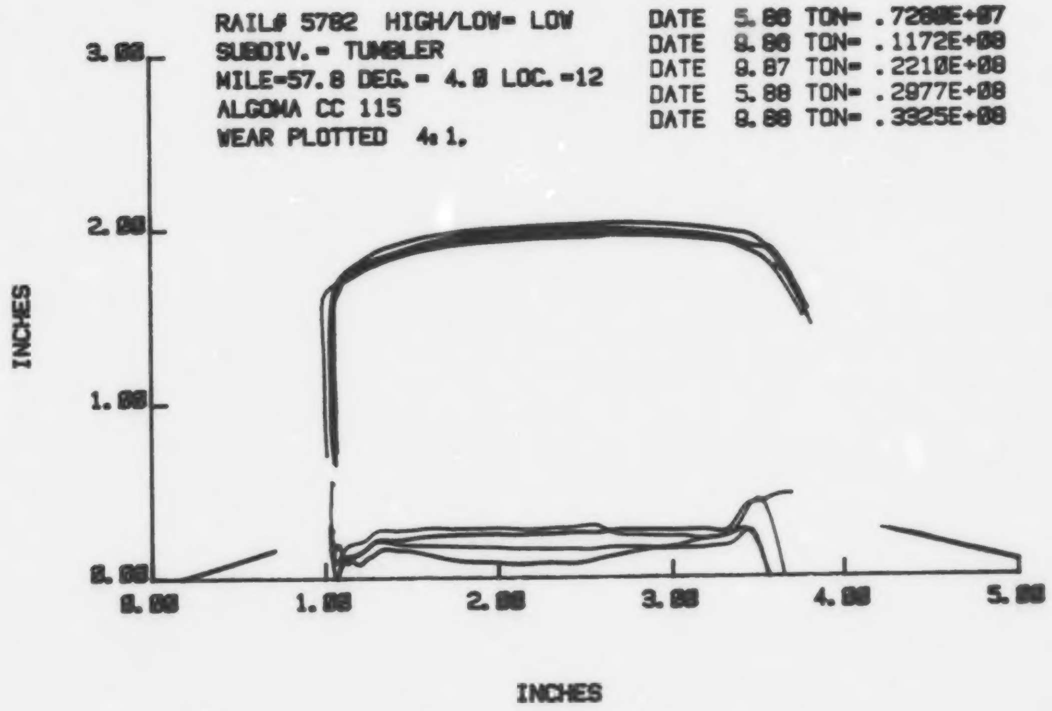

RAIL# 5583 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=55.8 DEG.= 3.5 LOC.=21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

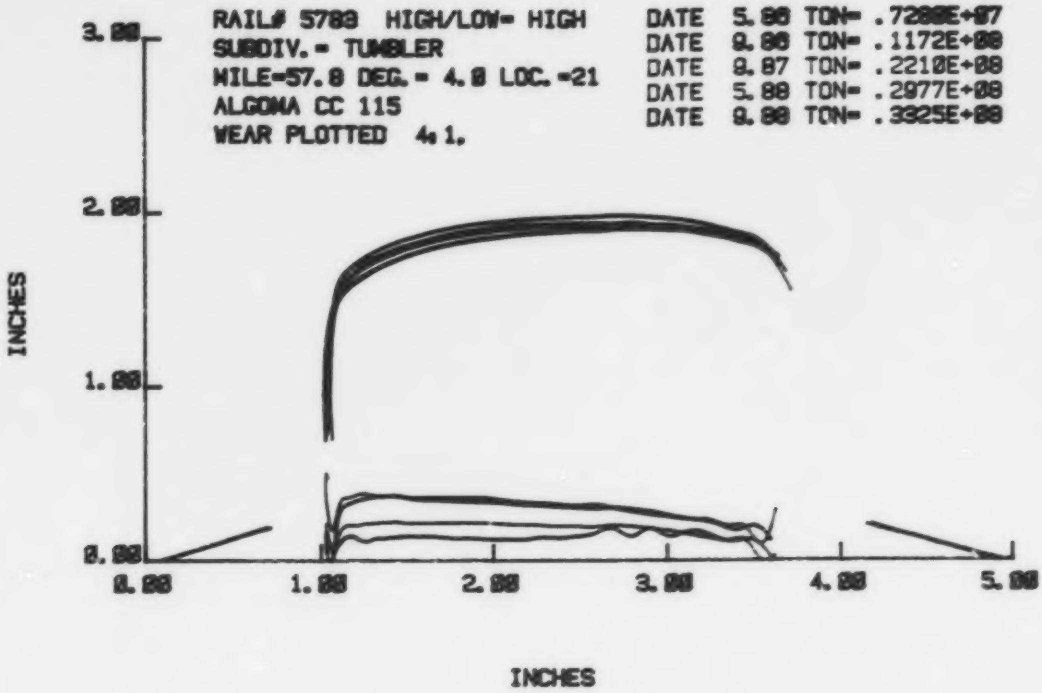

RAIL# 5584 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=55.8 DEG.= 3.5 LOC.=22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

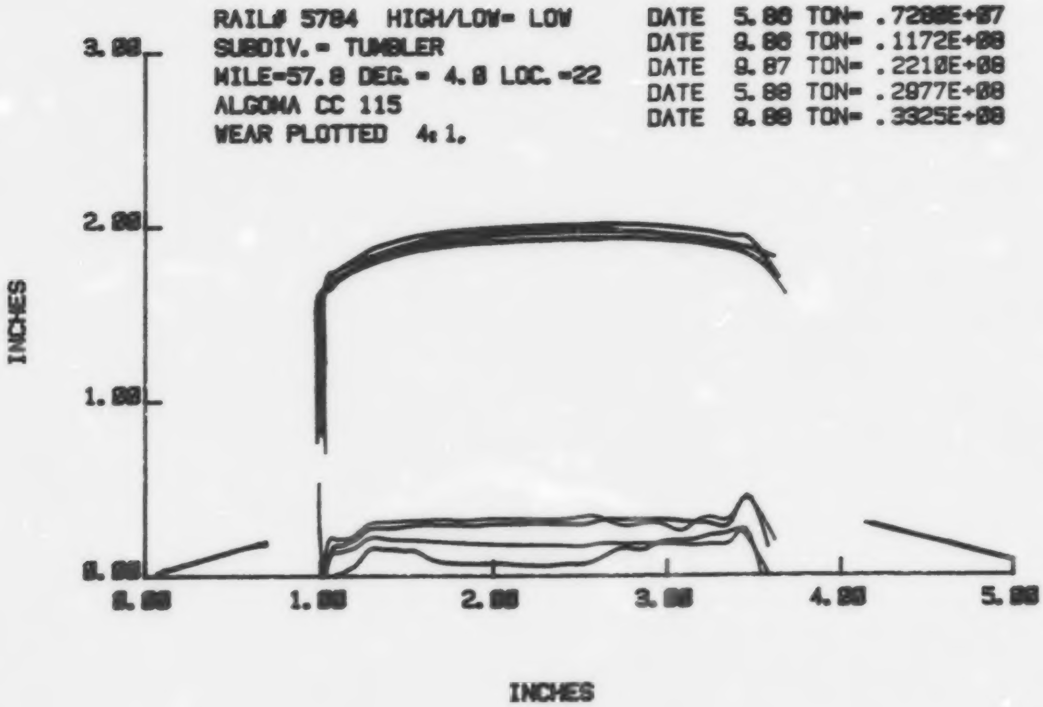

RAIL# 5585 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=55.8 DEG.= 3.5 LOC.=31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

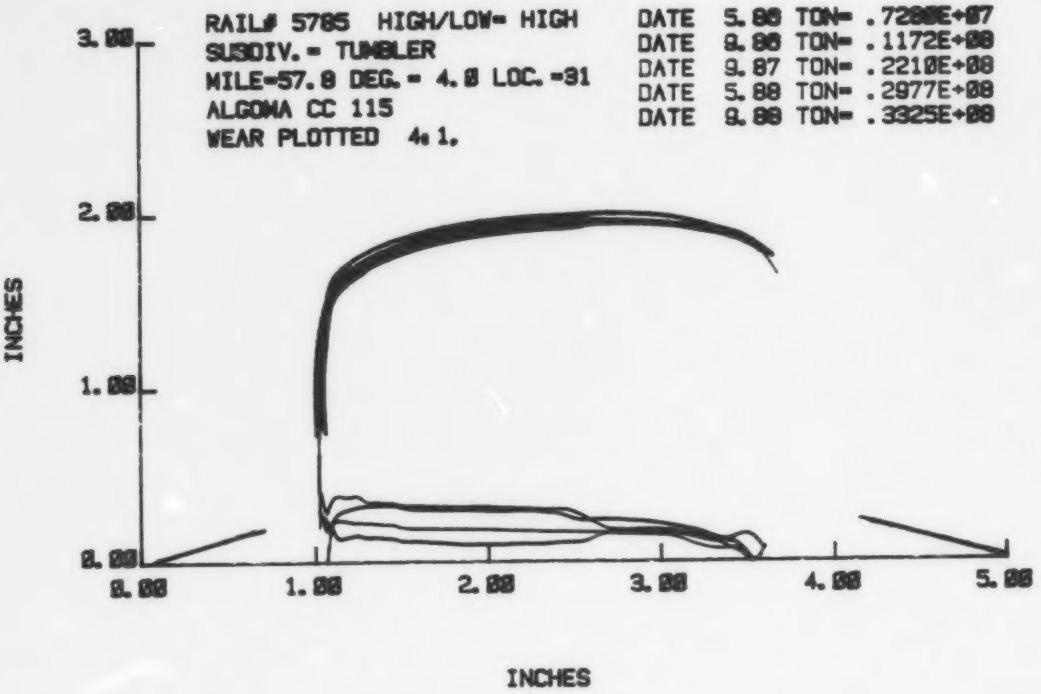

RAIL# 5586 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=55.8 DEG.= 3.5 LOC.=32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

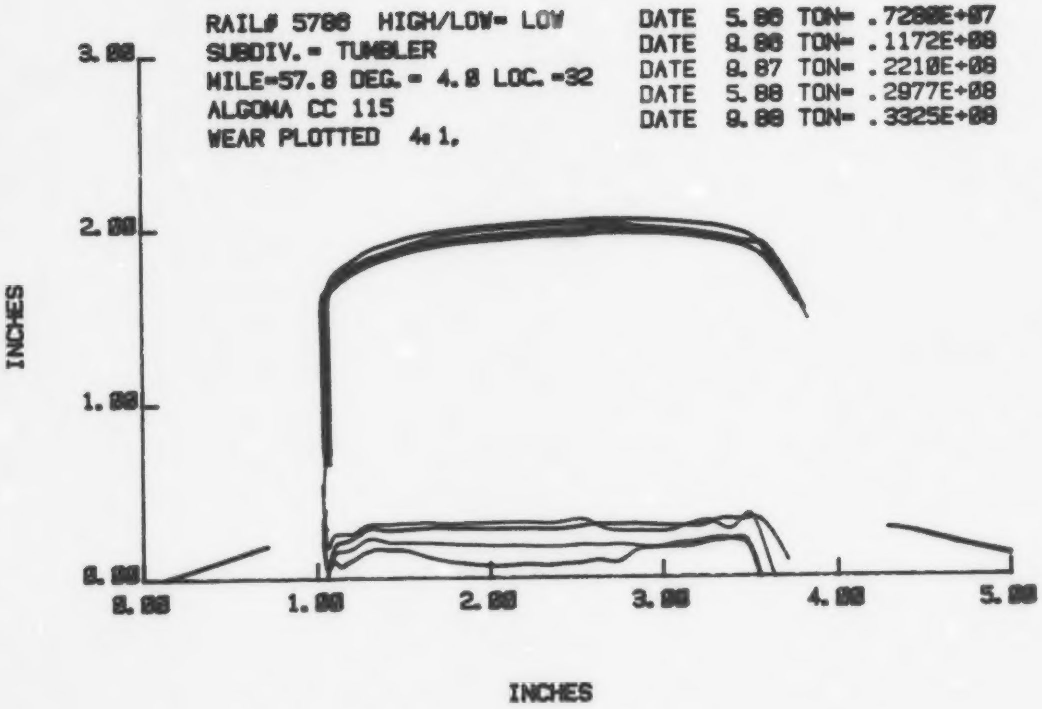

RAIL# 5701 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=57.8 DEG.= 4.0 LOC.=11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7200E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

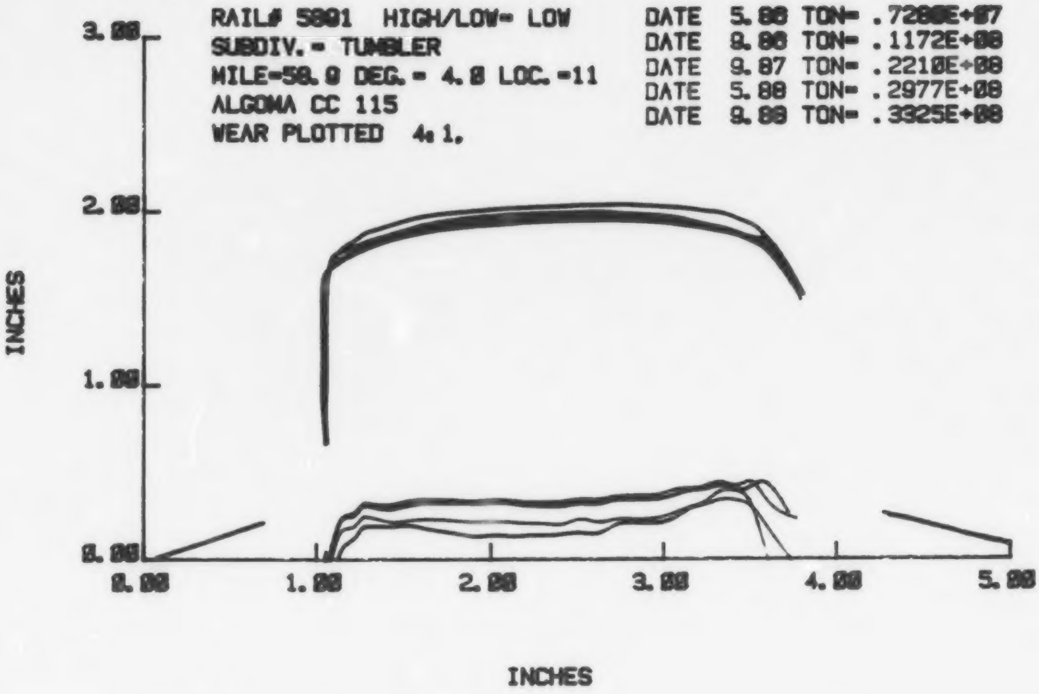

RAIL# 5702 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=57.8 DEG.= 4.0 LOC.=12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7200E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

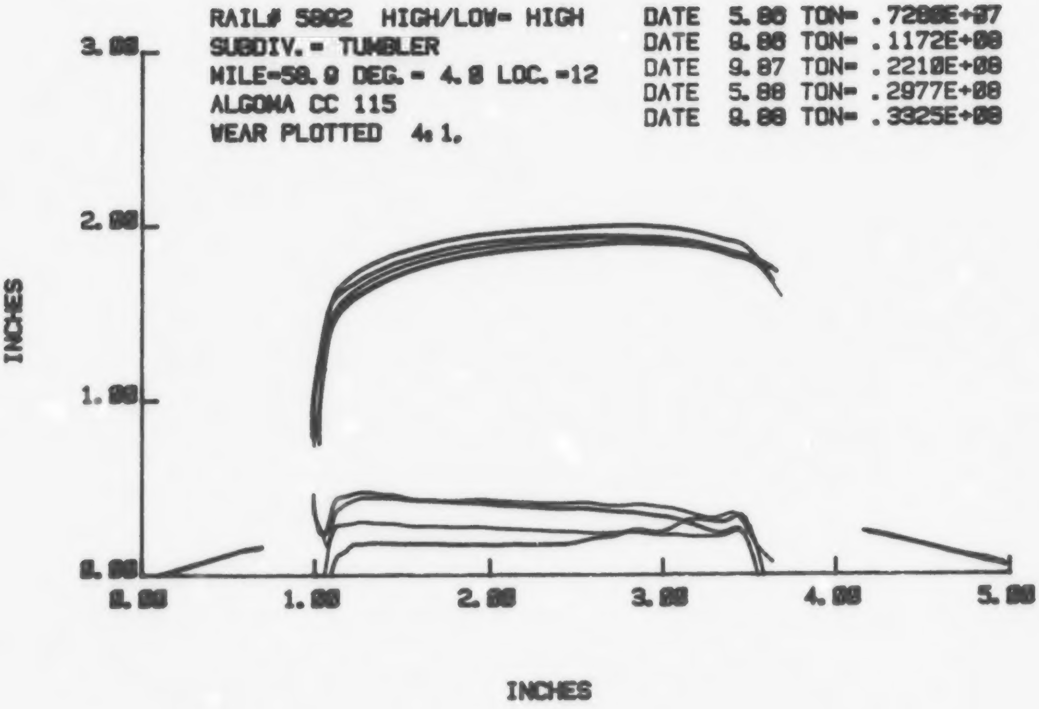

RAIL# 5783 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=57.8 DEG. = 4.0 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

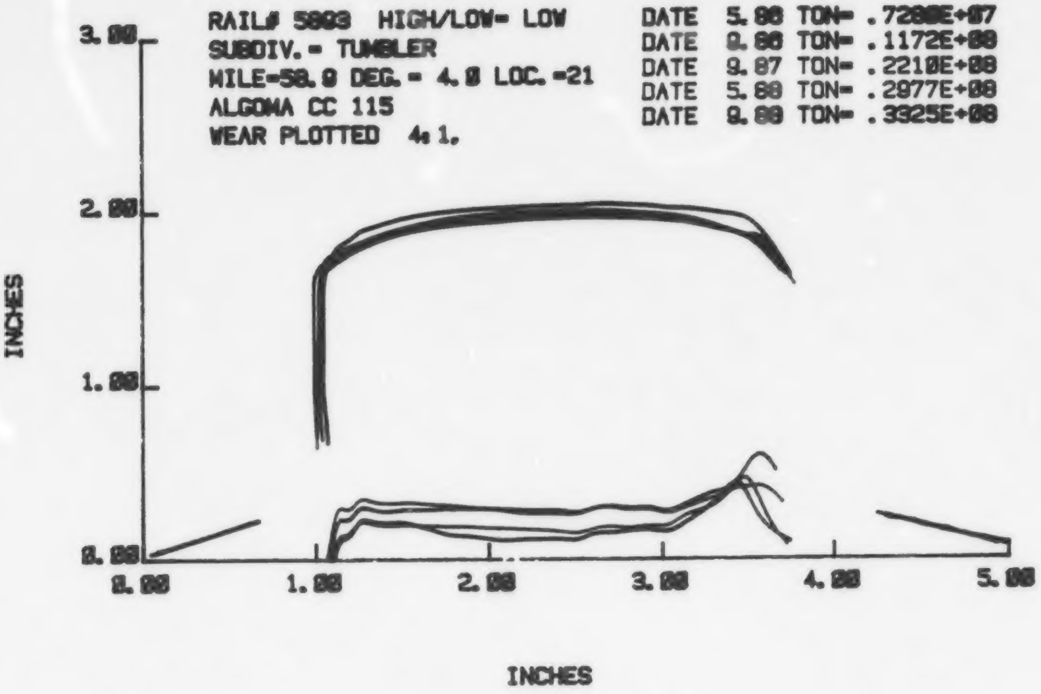

RAIL# 5784 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=57.8 DEG. = 4.0 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

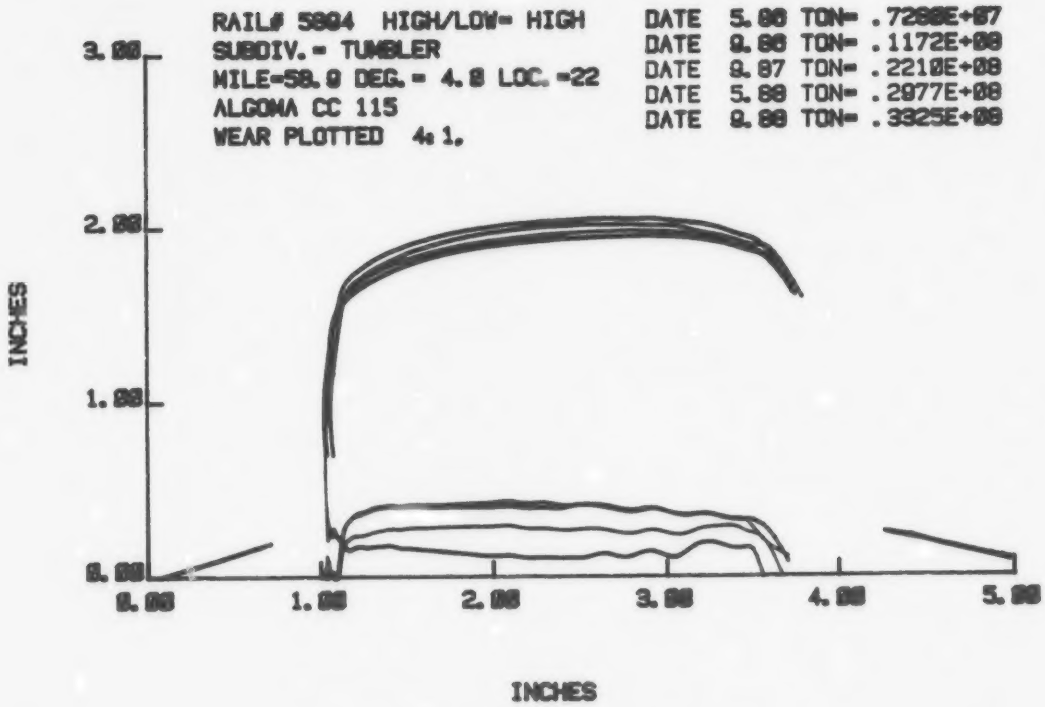

RAIL# 5785 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=57.8 DEG. = 4.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .7280E+07
DATE 8.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

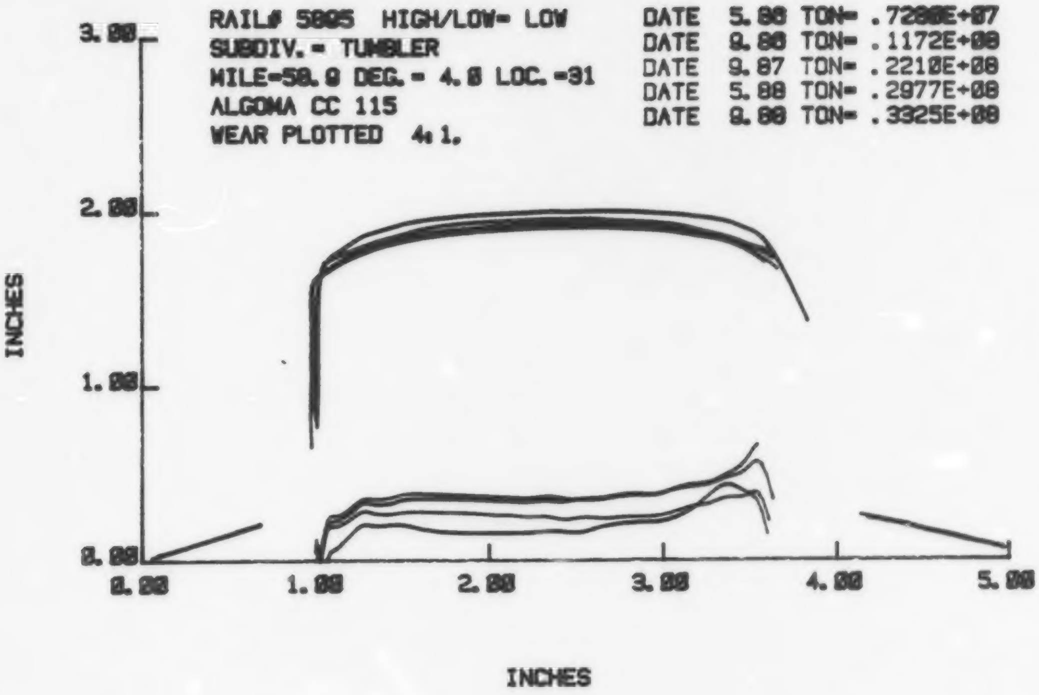

RAIL# 5786 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=57.8 DEG. = 4.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .7280E+07
DATE 8.86 TON= .1172E+08
DATE 8.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

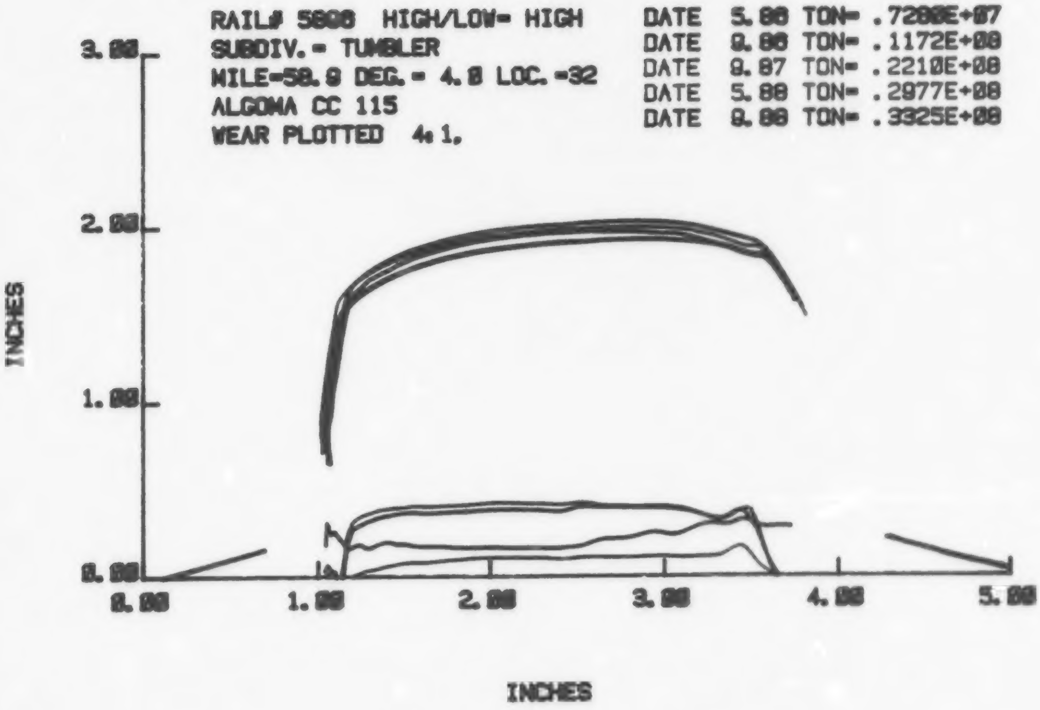

RAIL# 5001 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=58.0 DEG.= 4.0 LOC.=11
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

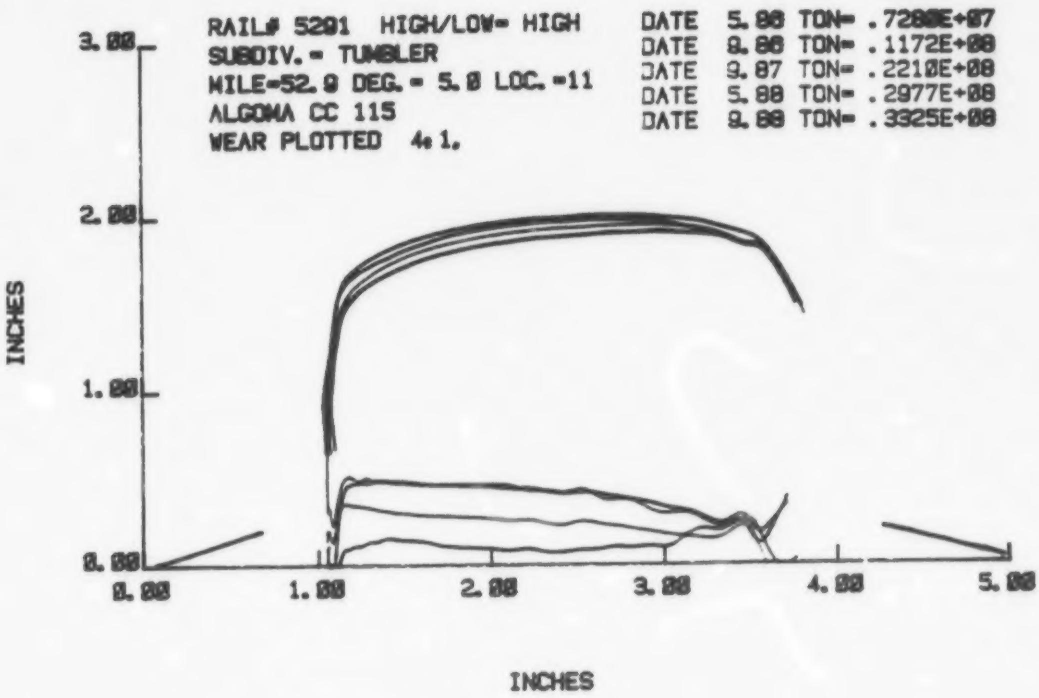

RAIL# 5002 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=58.0 DEG.= 4.0 LOC.=12
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

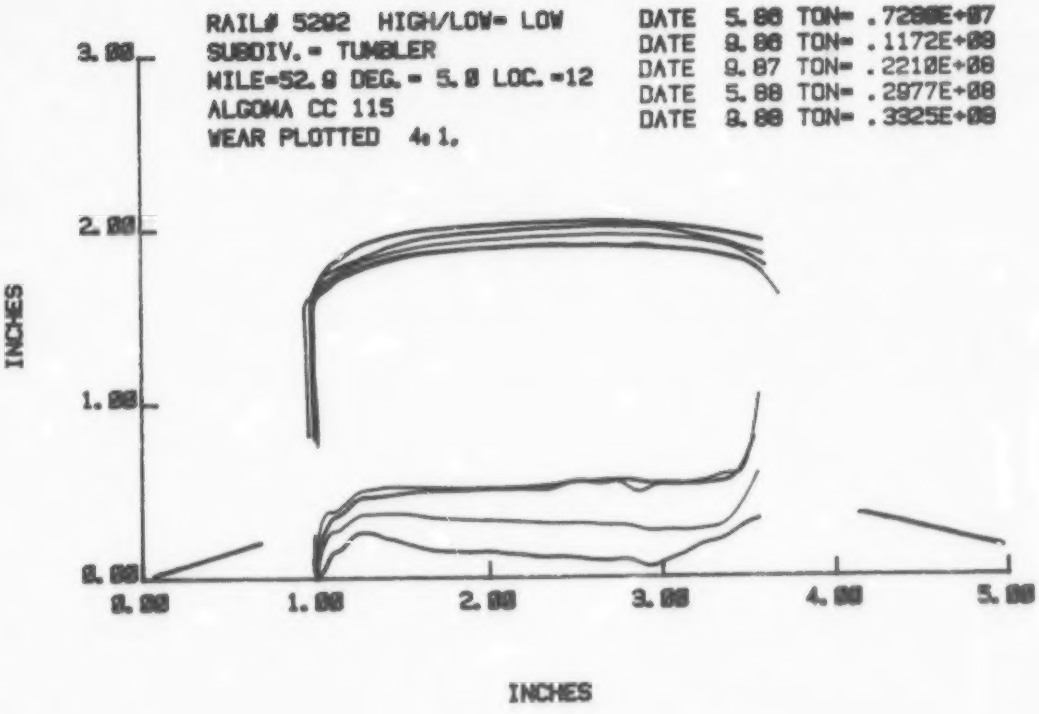

RAIL# 5003 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=58.9 DEG.= 4.0 LOC.=21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7200E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

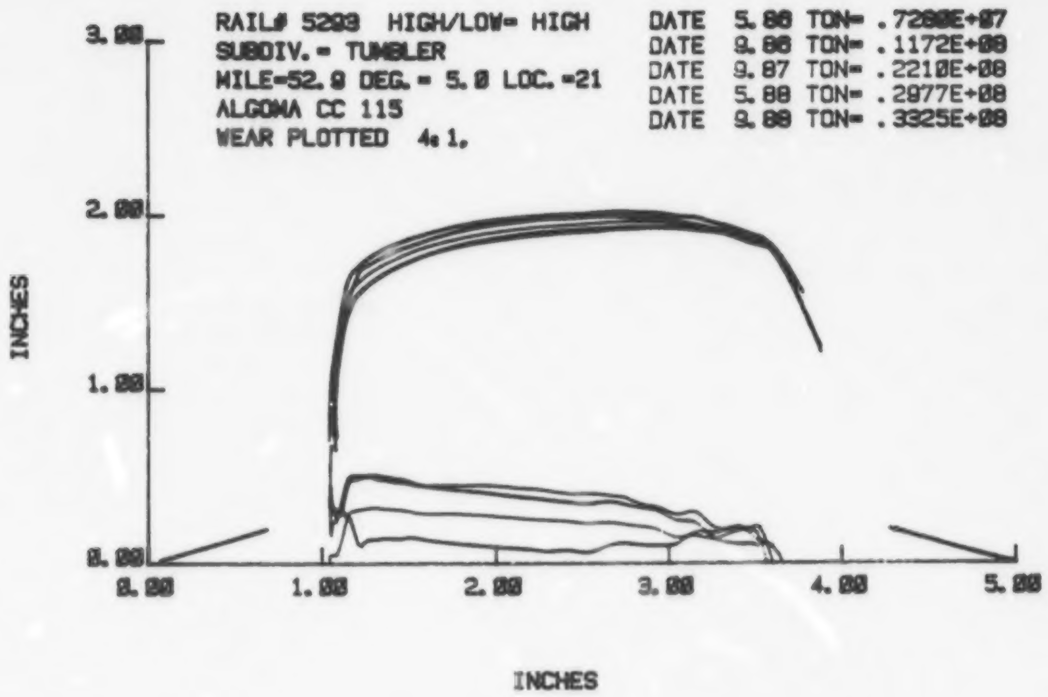

RAIL# 5004 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=58.9 DEG.= 4.0 LOC.=22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7200E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

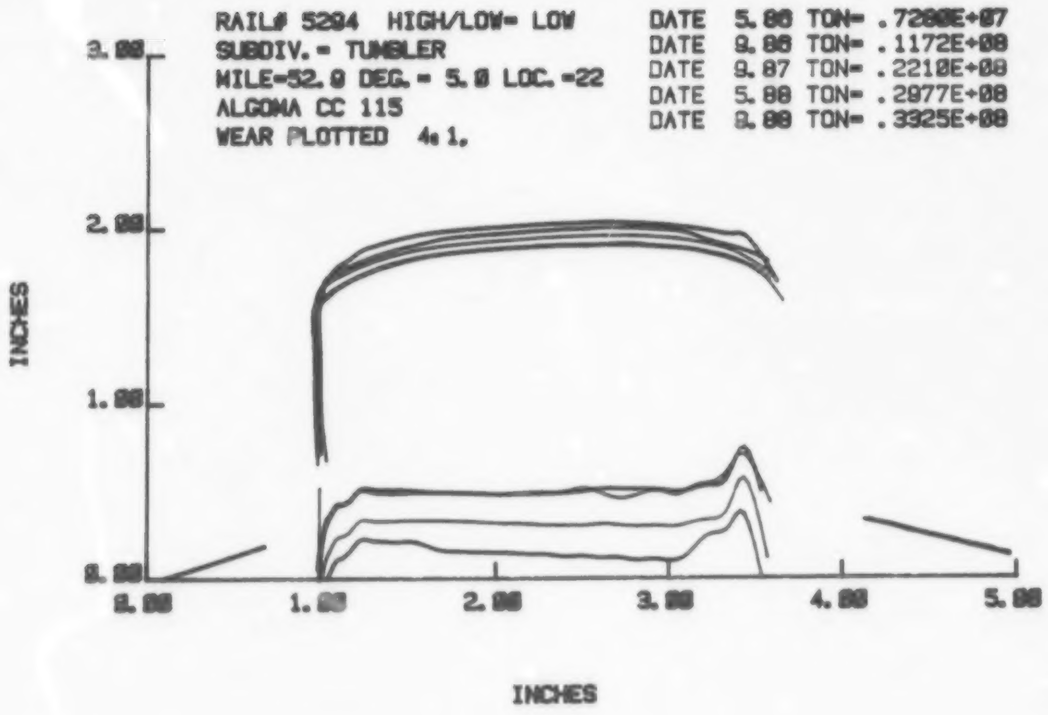

RAIL# 5805 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=50.9 DEG. = 4.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 8.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 8.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

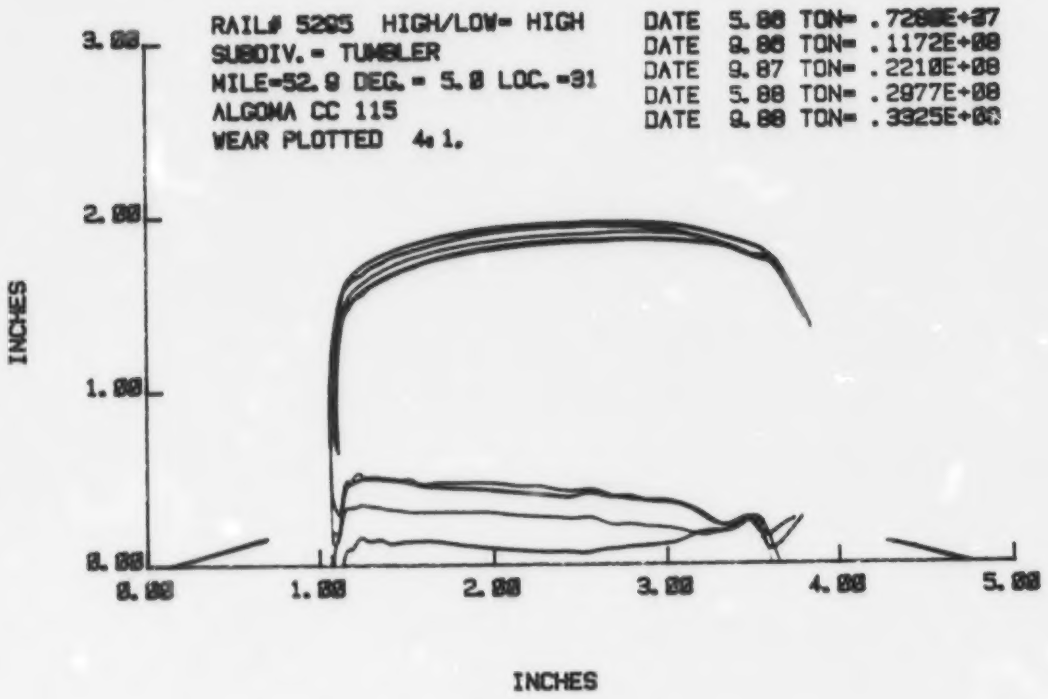

RAIL# 5806 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=50.9 DEG. = 4.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 8.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 8.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

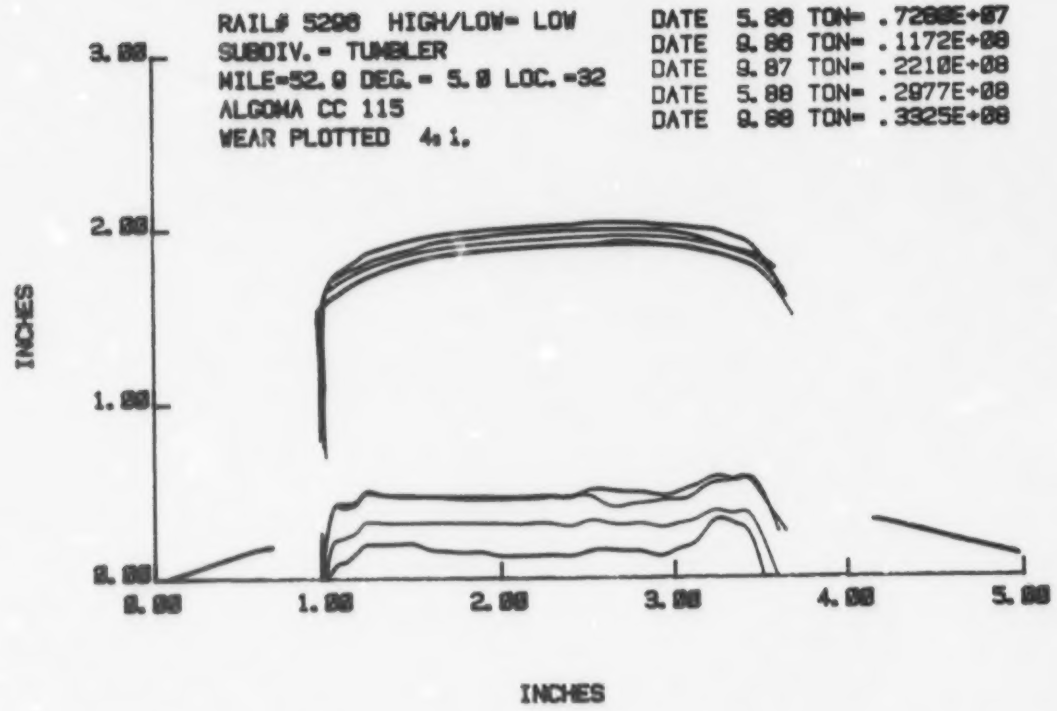

RAIL# 5201 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=52.9 DEG.= 5.0 LOC.=11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 8.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 8.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

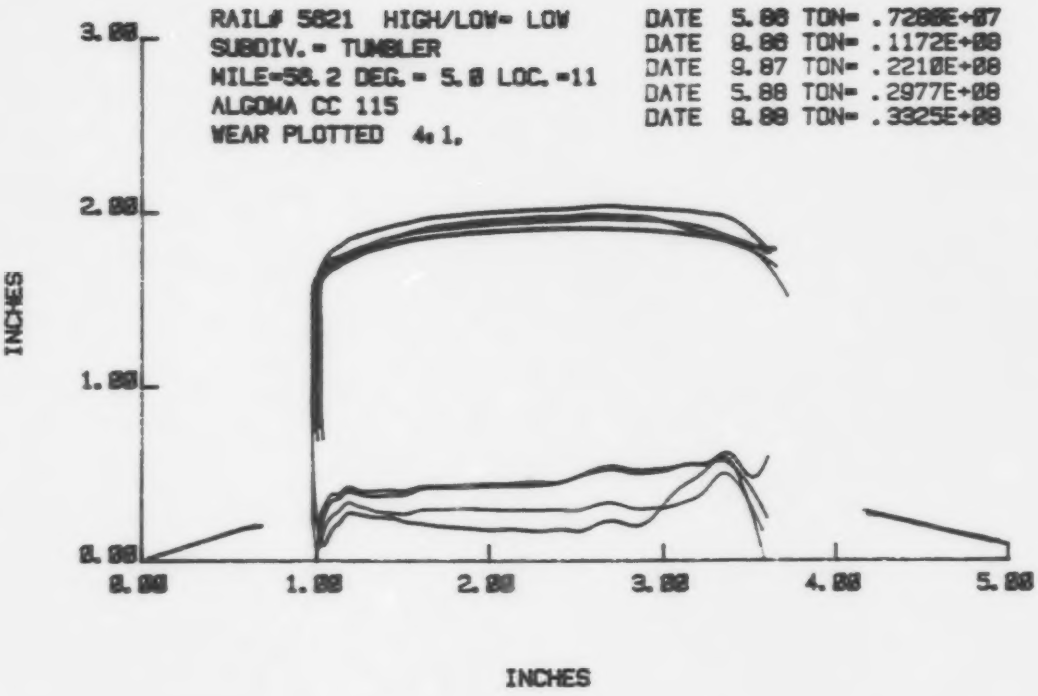

RAIL# 5202 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=52.9 DEG.= 5.0 LOC.=12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 8.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 8.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

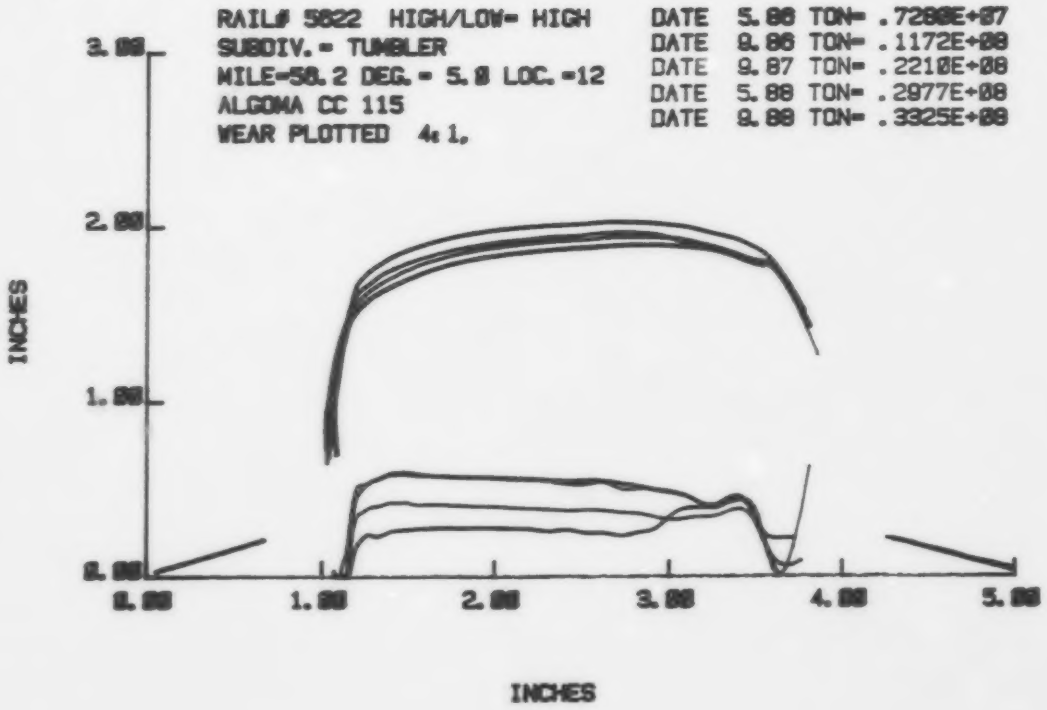

RAIL# 5293 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=52.9 DEG. = 5.0 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .7200E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2877E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

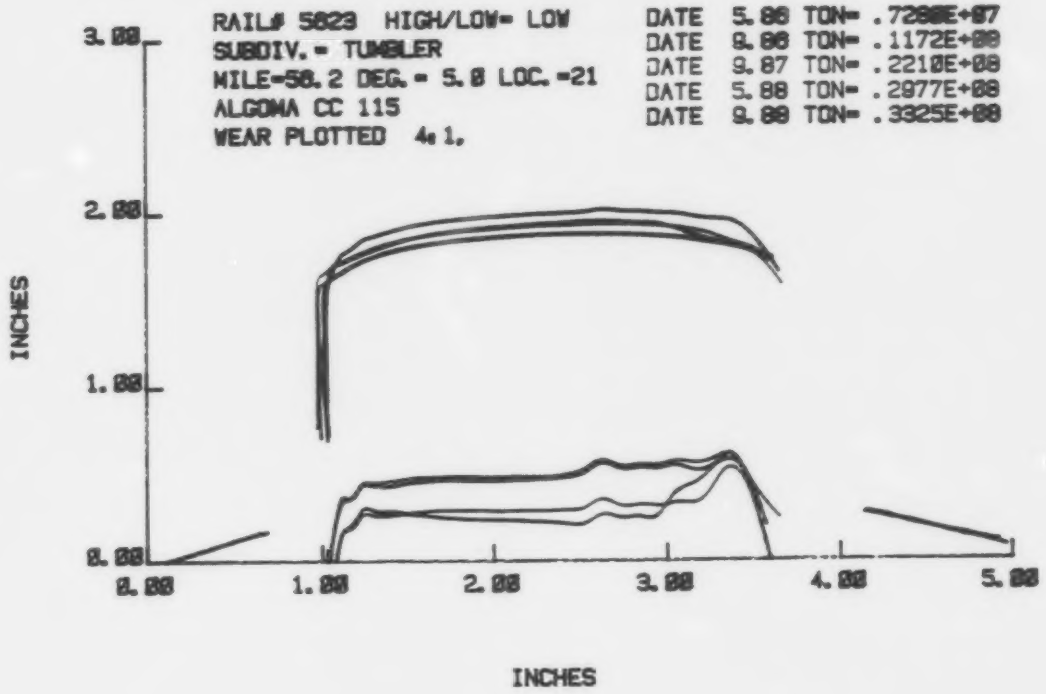

RAIL# 5294 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=52.9 DEG. = 5.0 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .7200E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2877E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

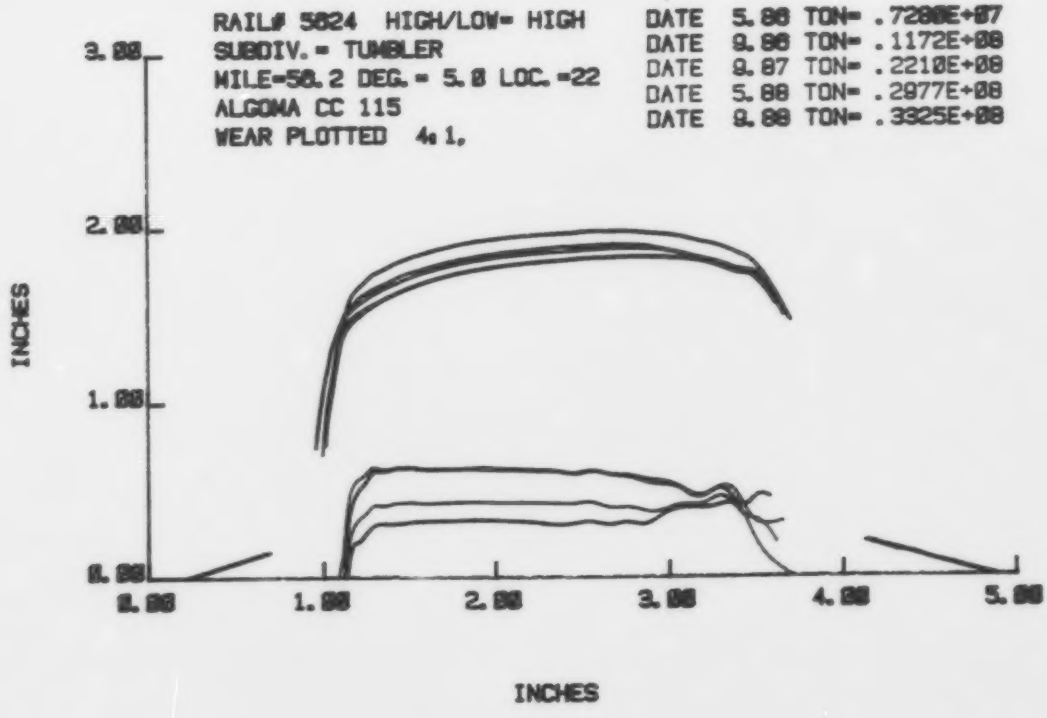

RAIL# 5295 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=52.9 DEG. = 5.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

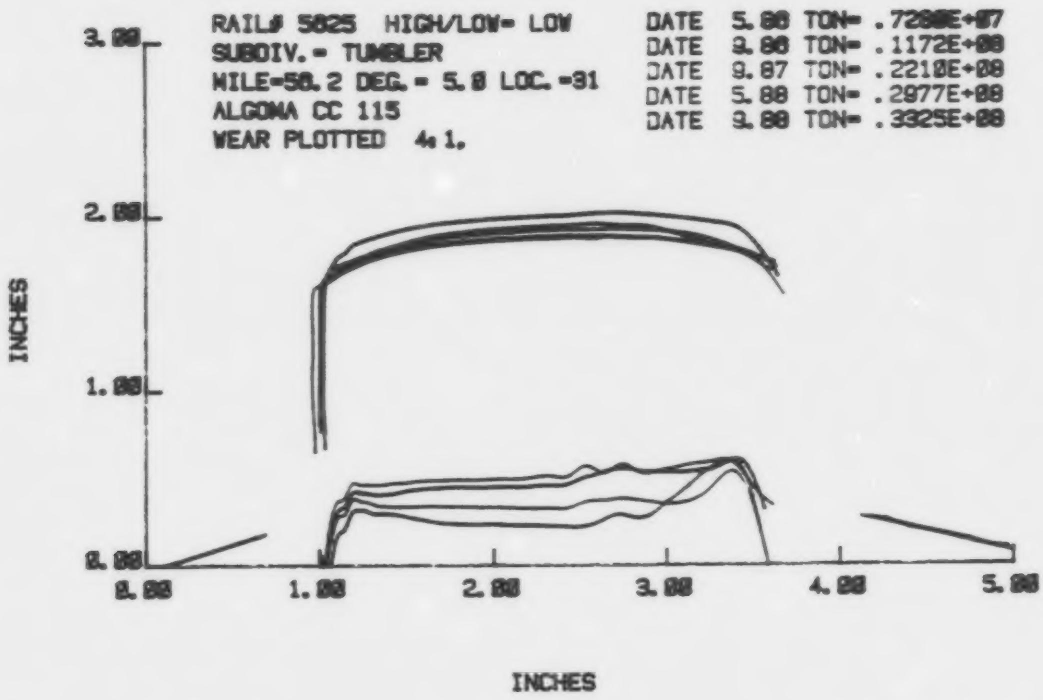

RAIL# 5296 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=52.9 DEG. = 5.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

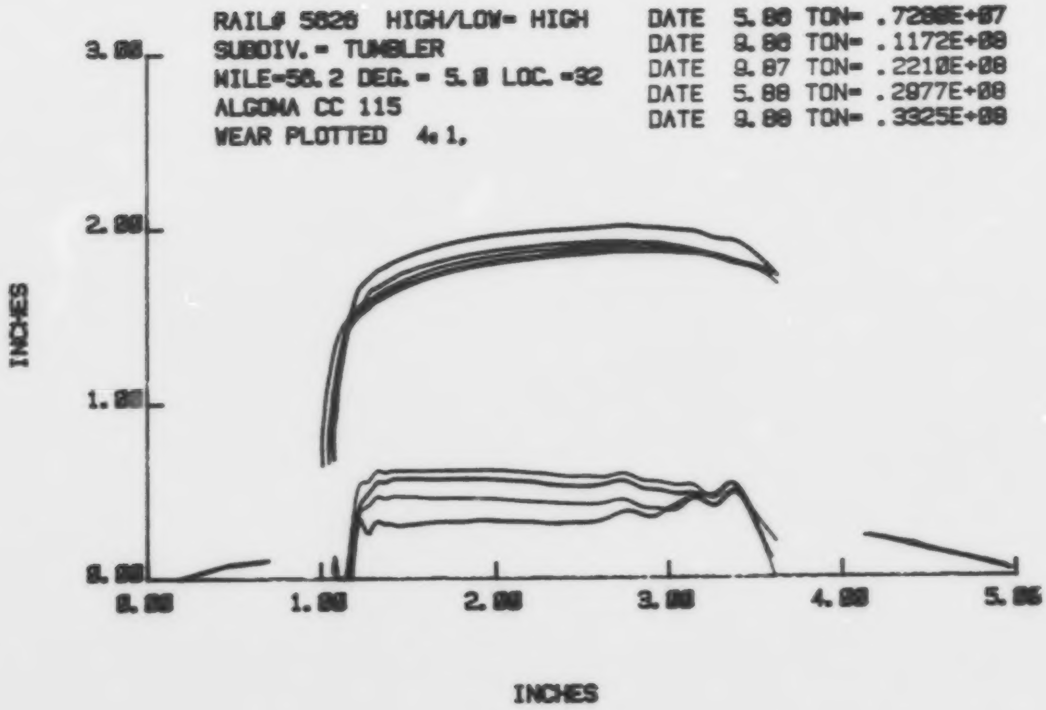

RAIL# 5821 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=58.2 DEG. = 5.0 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

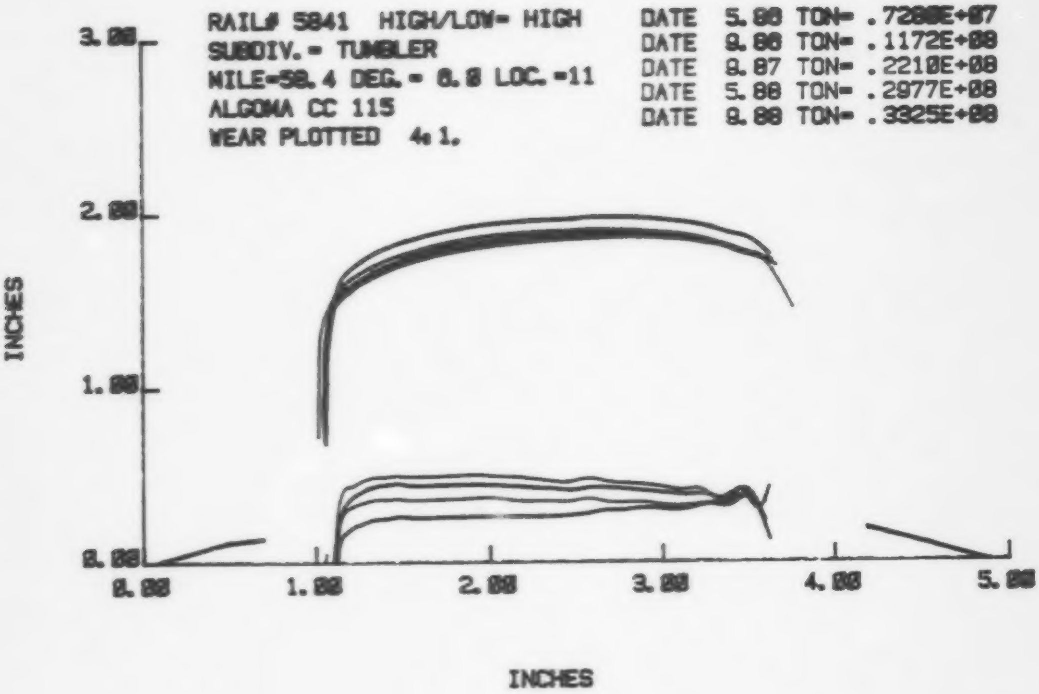

RAIL# 5822 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=58.2 DEG. = 5.0 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

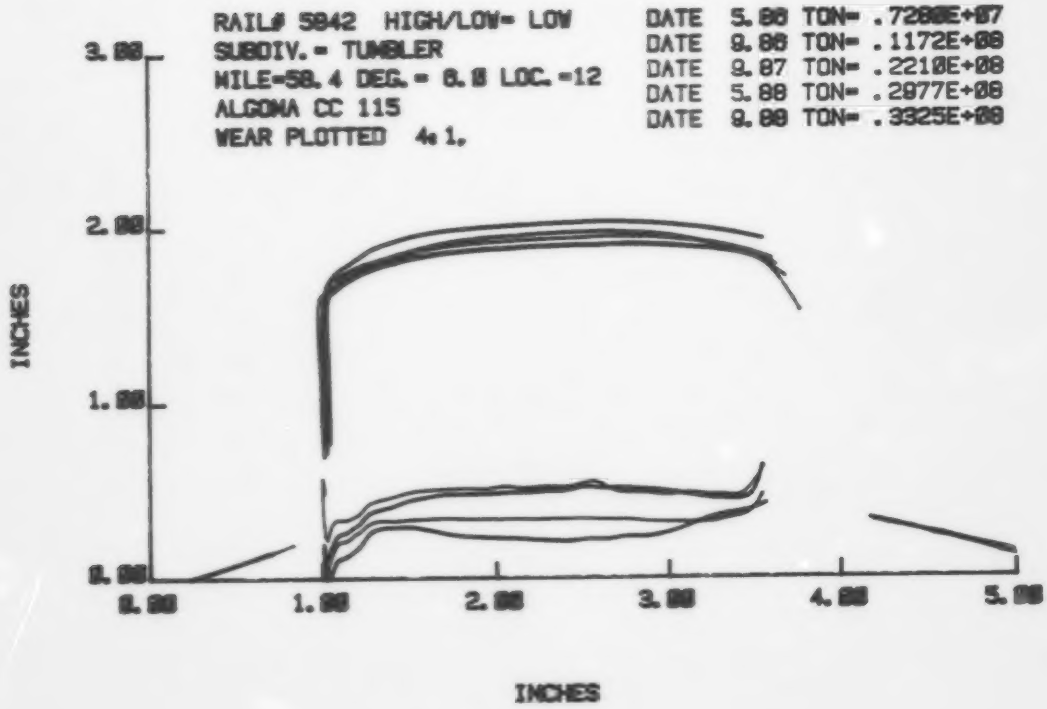

RAIL# 5823 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=58.2 DEG.= 5.0 LOC.=21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

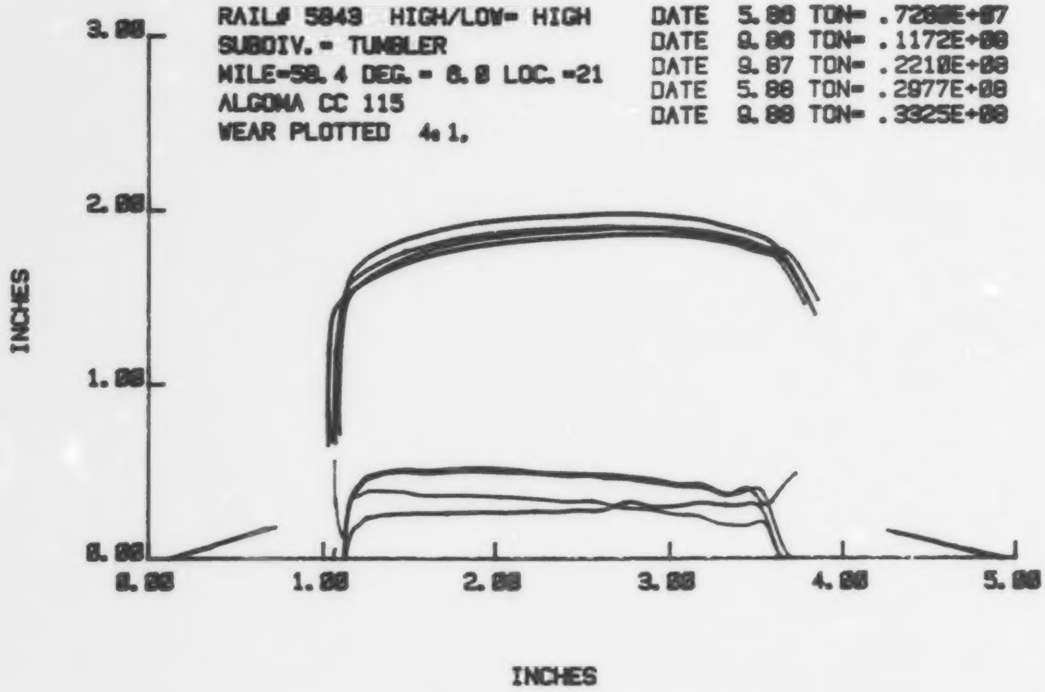

RAIL# 5824 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=58.2 DEG.= 5.0 LOC.=22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

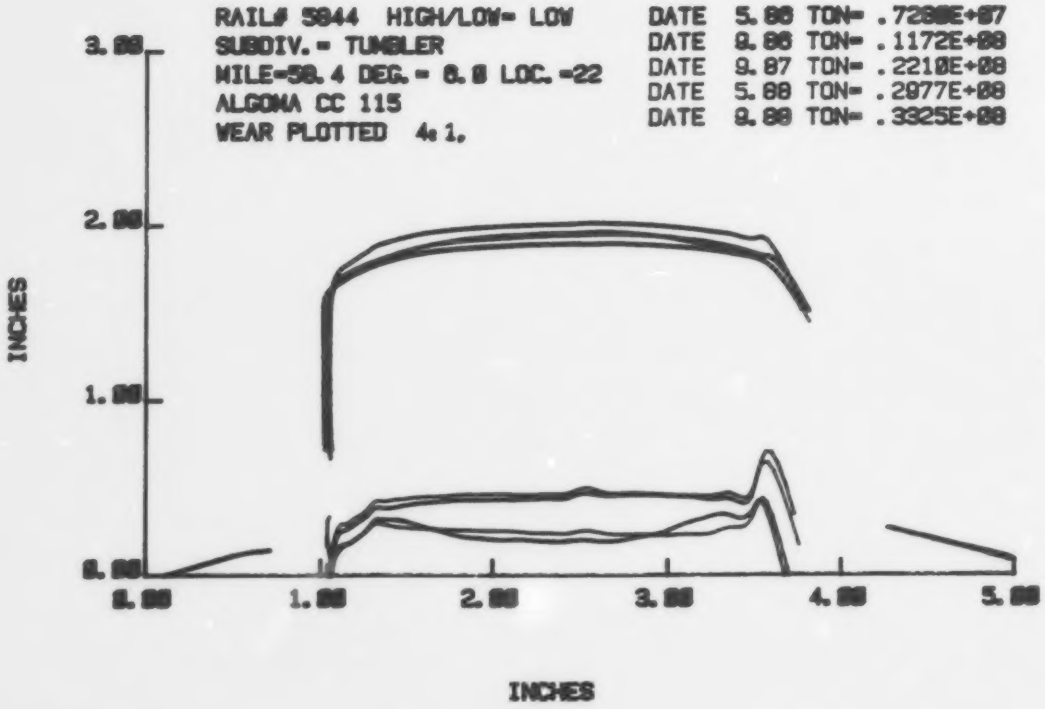

RAIL# 5825 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=58.2 DEG.= 5.0 LOC.=31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

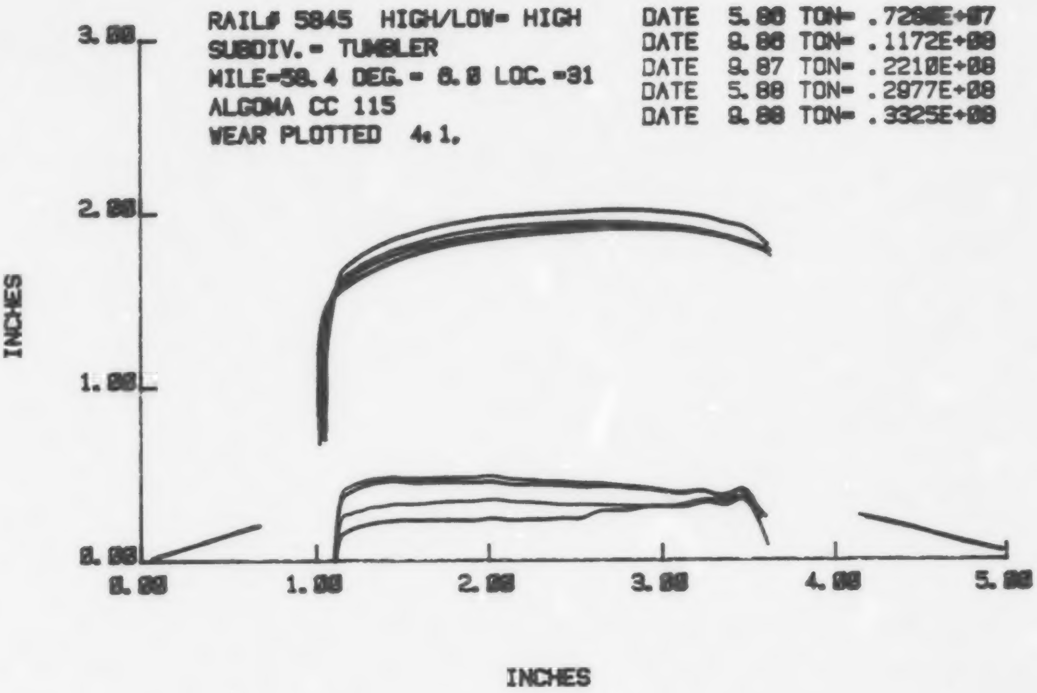

RAIL# 5826 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=58.2 DEG.= 5.0 LOC.=32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

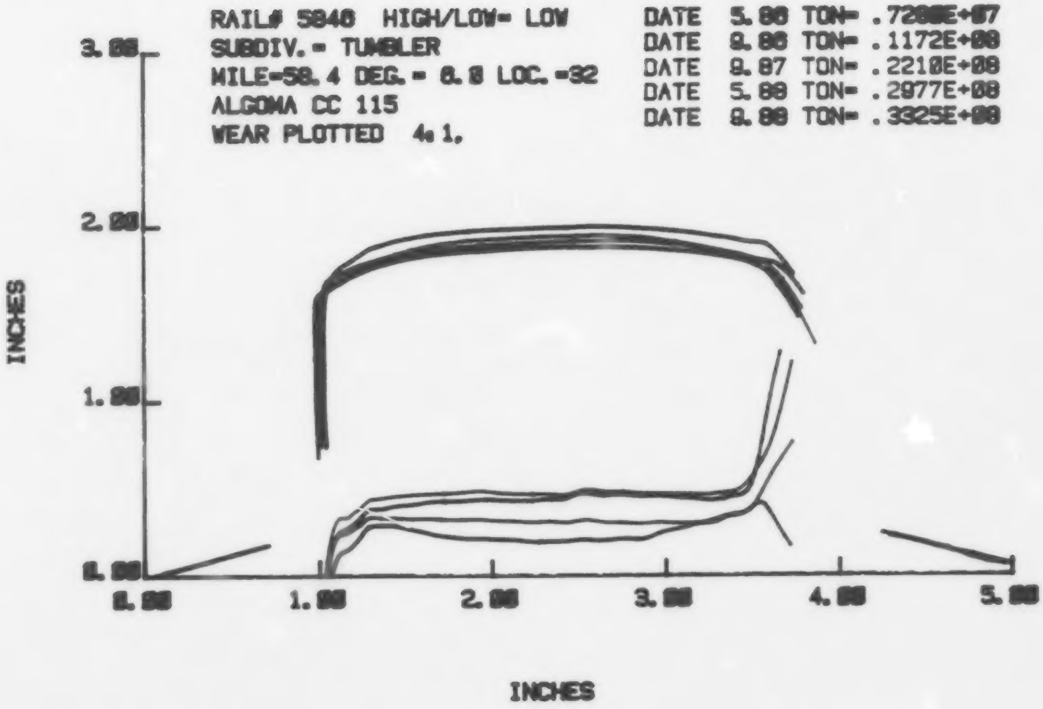

RAIL# 5841 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=58.4 DEG. = 0.0 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

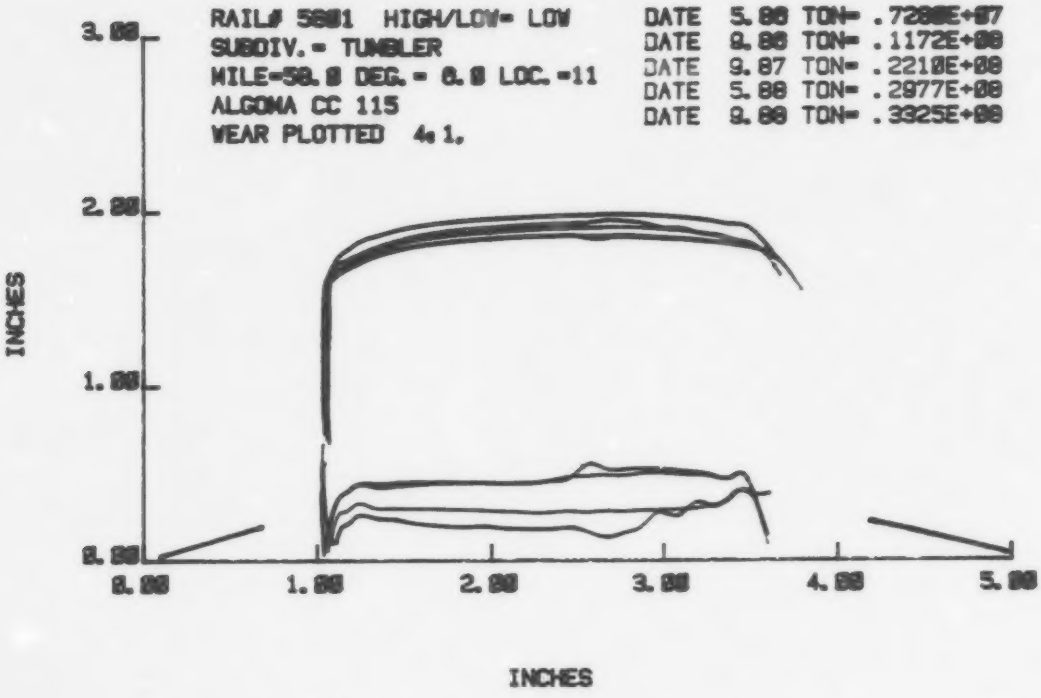

RAIL# 5842 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=58.4 DEG. = 0.0 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

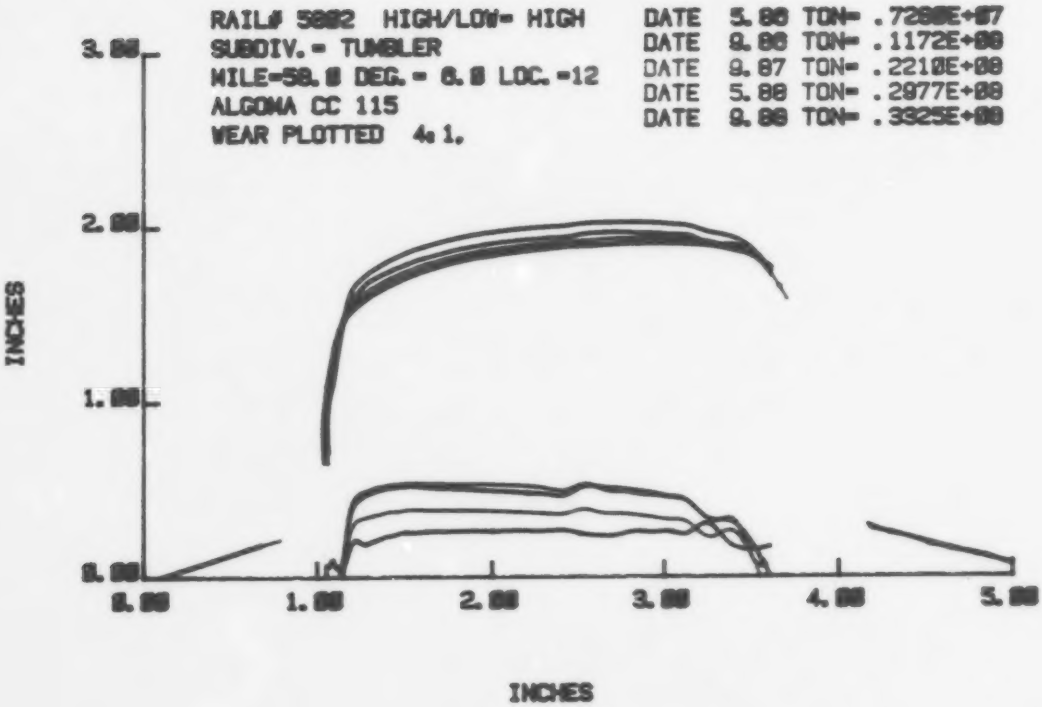

RAIL# 5843 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=58.4 DEG.= 6.0 LOC.=21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

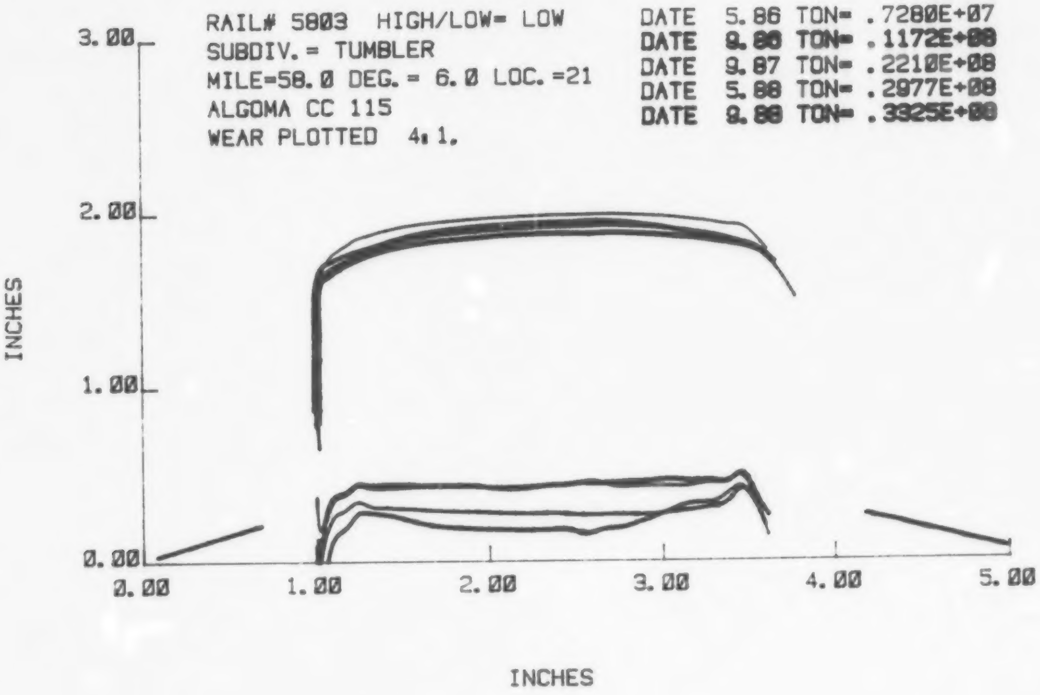

RAIL# 5844 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=58.4 DEG.= 6.0 LOC.=22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

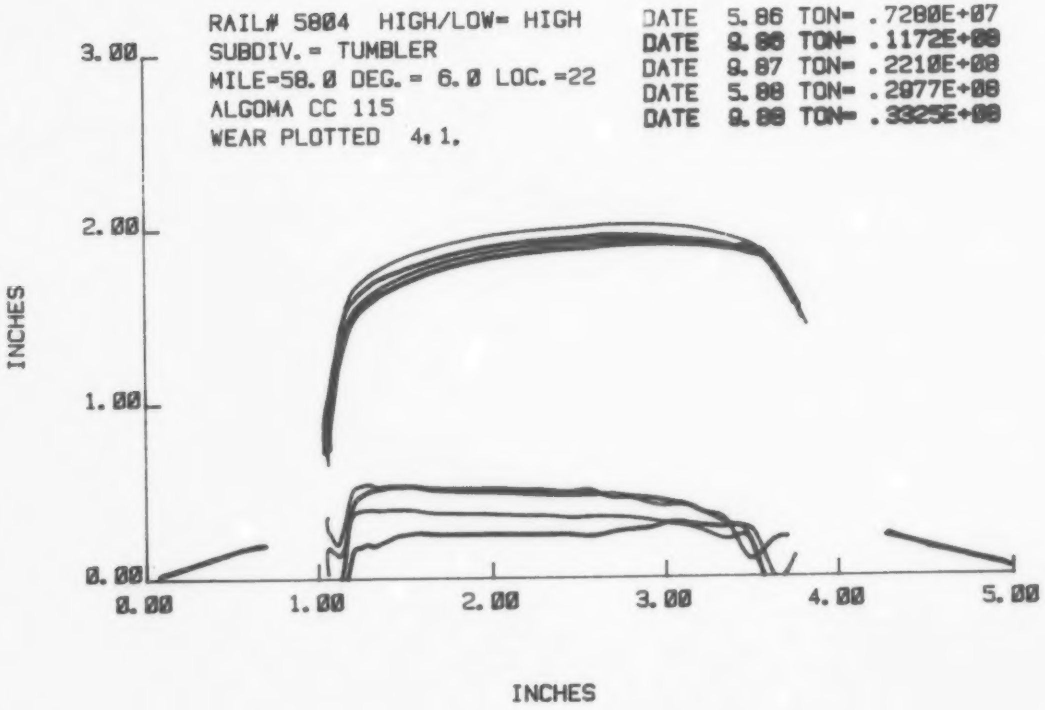

RAIL# 5845 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=58.4 DEG.= 8.0 LOC.=31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

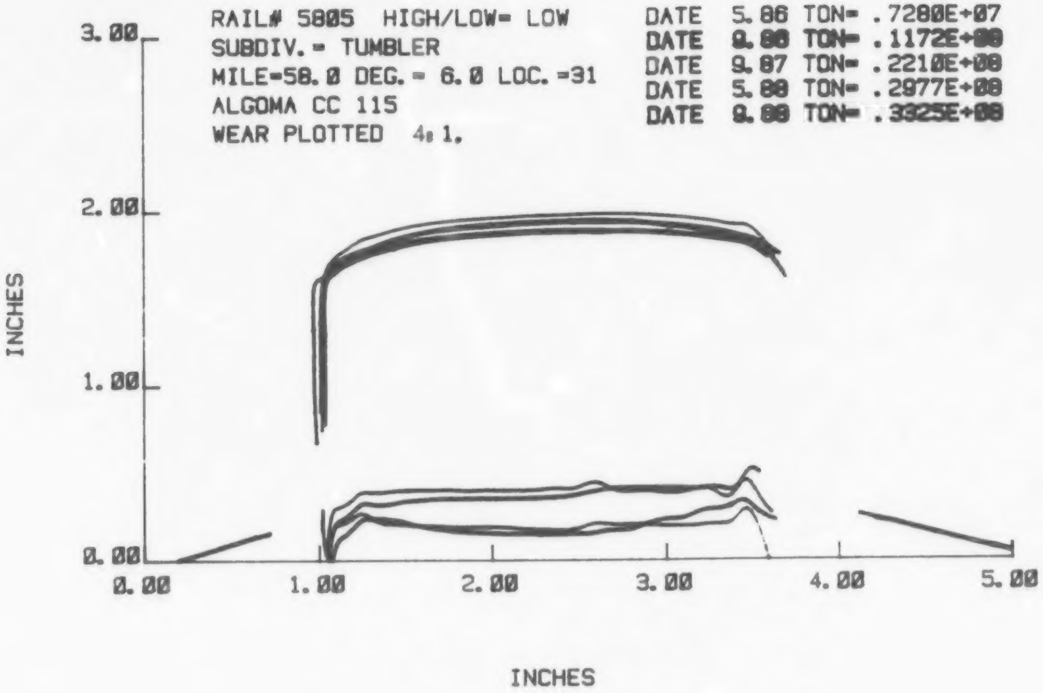

RAIL# 5846 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=58.4 DEG.= 8.0 LOC.=32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

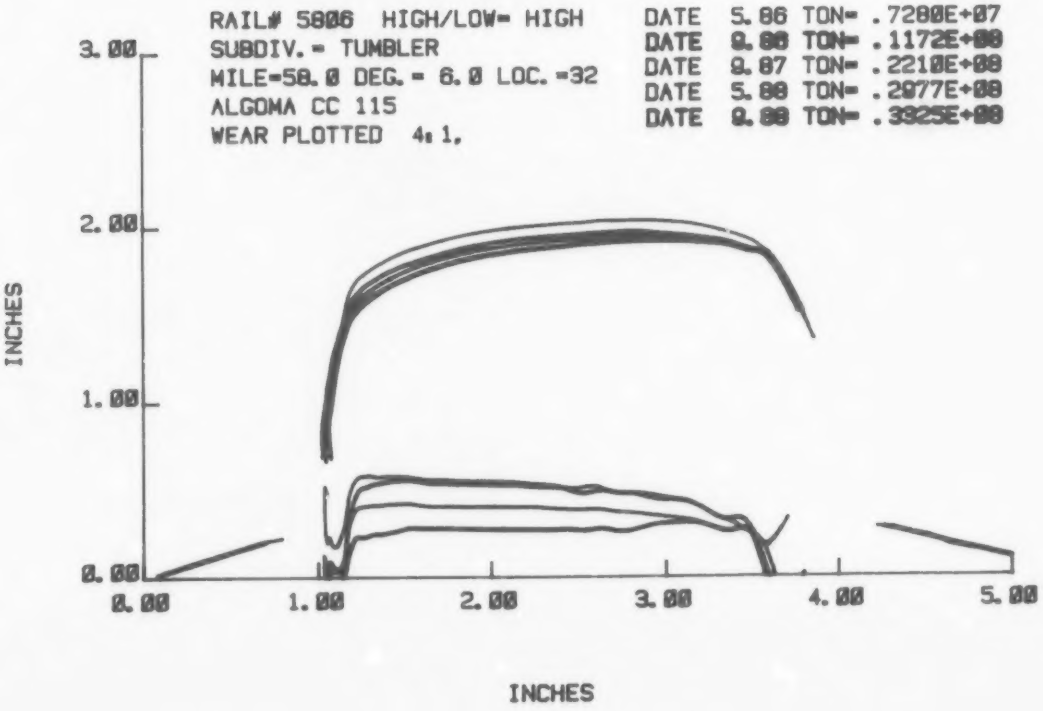

RAIL# 5001 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=58.0 DEG.= 0.0 LOC.=11
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

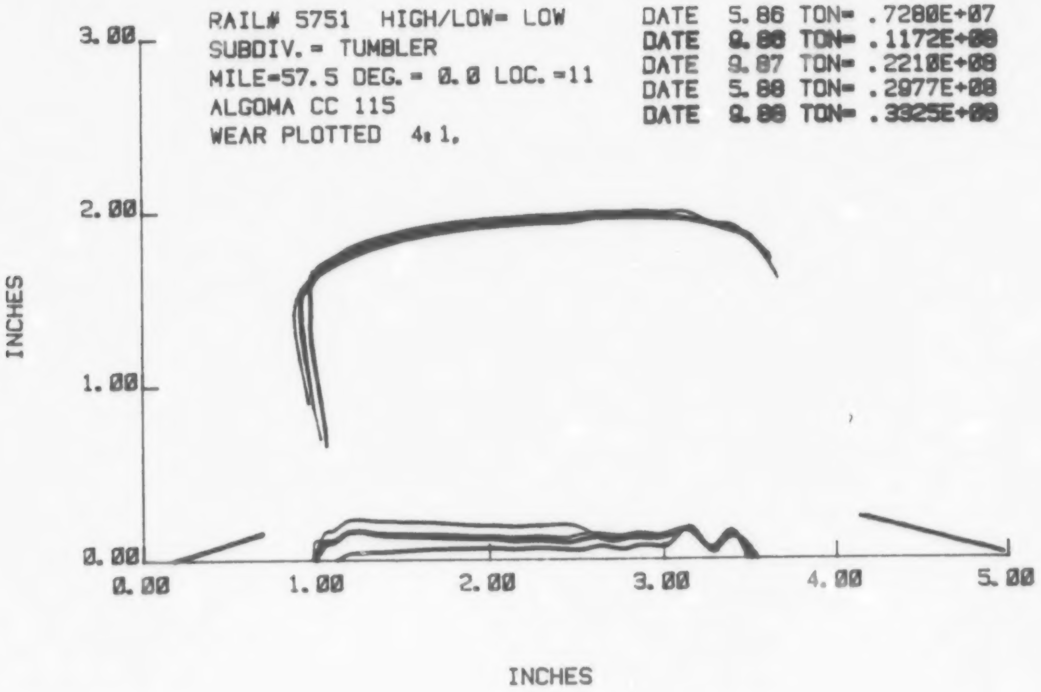

RAIL# 5002 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=58.0 DEG.= 0.0 LOC.=12
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

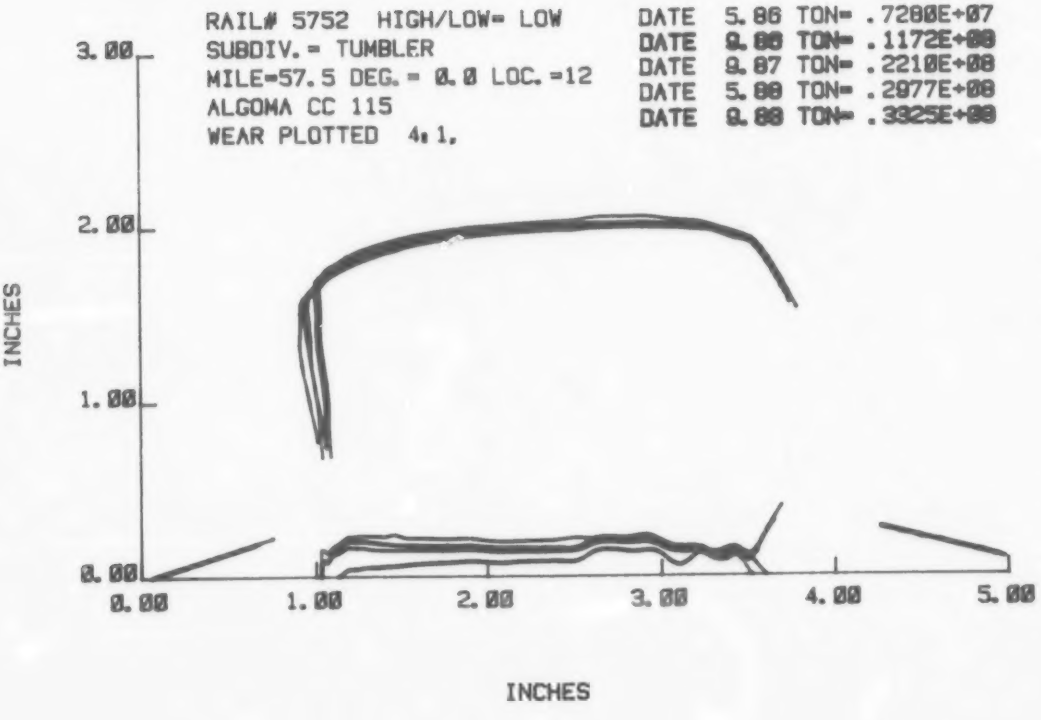

RAIL# 5803 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=58.0 DEG. = 6.0 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

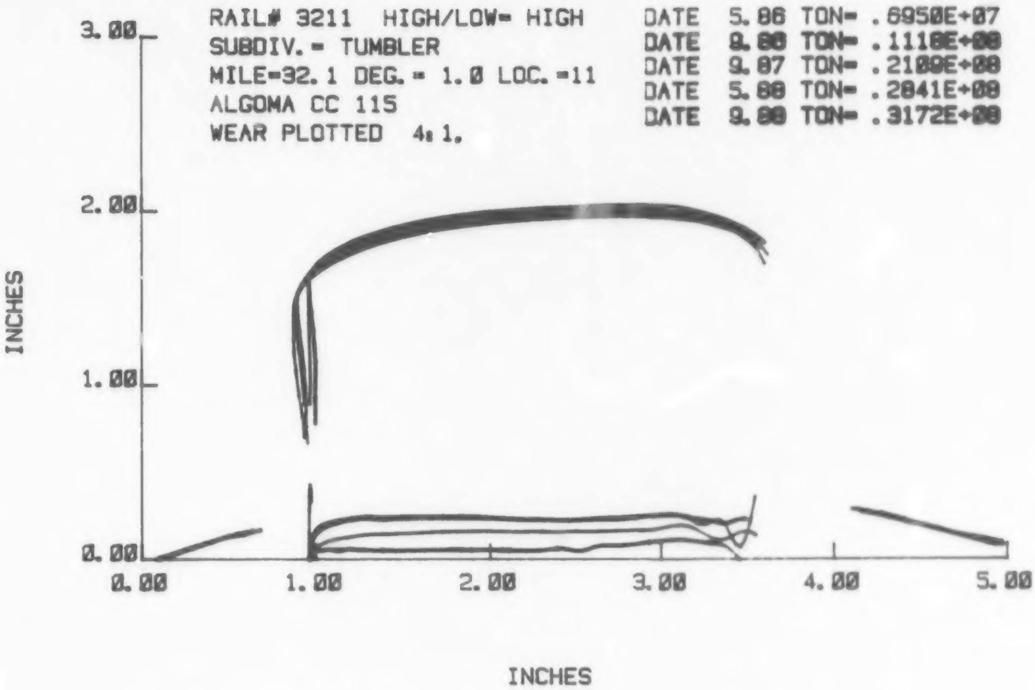

RAIL# 5804 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=58.0 DEG. = 6.0 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

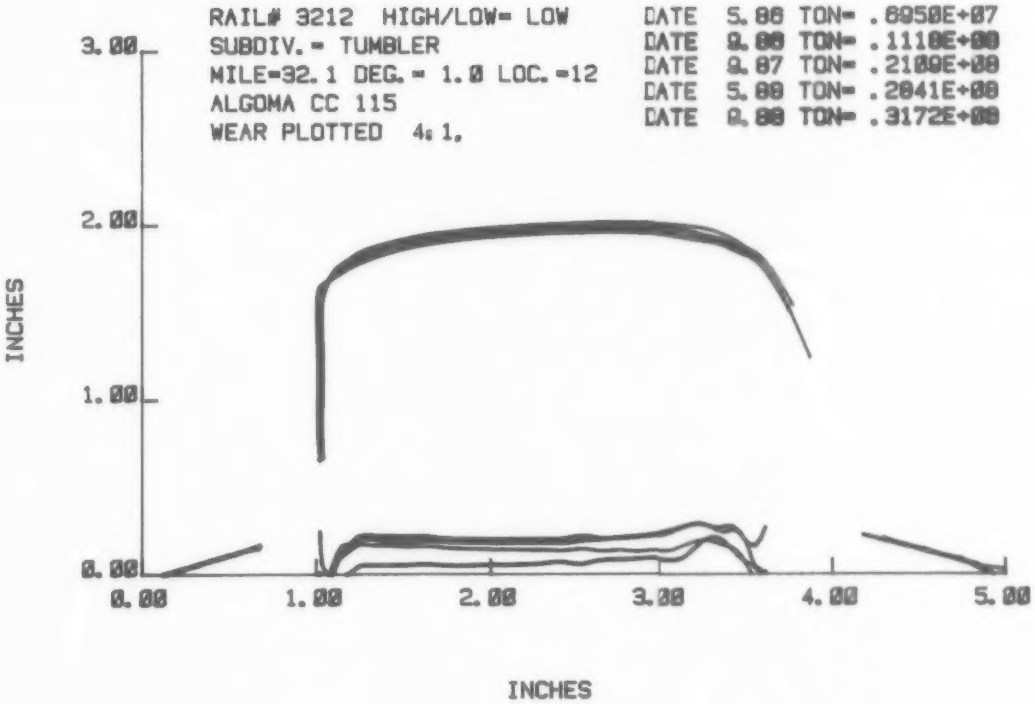

RAIL# 5805 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=58.0 DEG. = 6.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

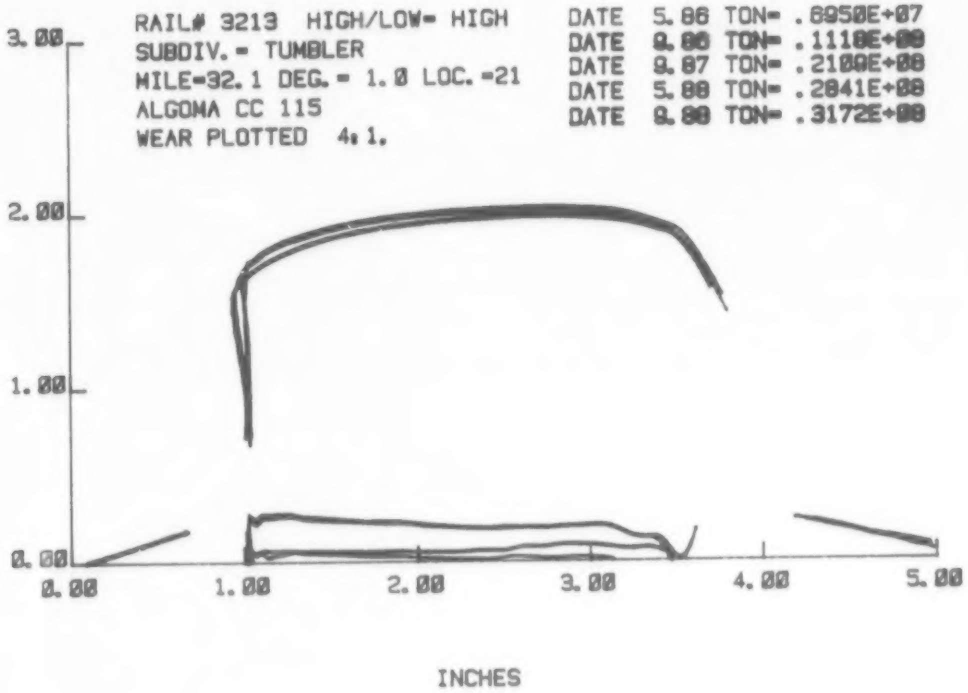

RAIL# 5806 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=58.0 DEG. = 6.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2877E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

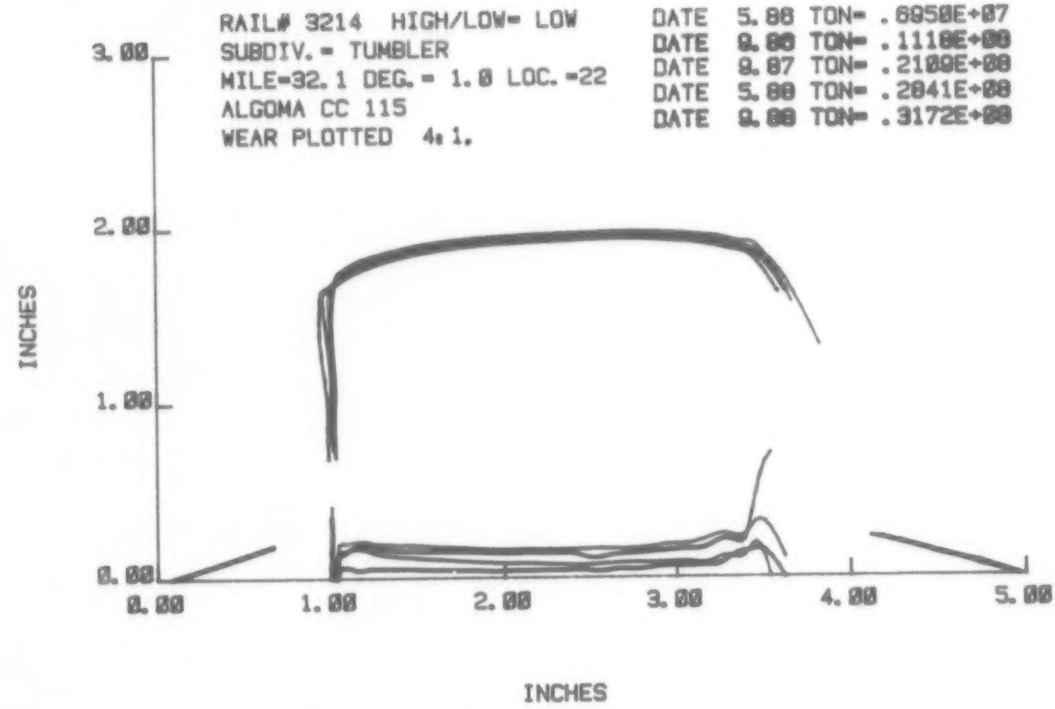

RAIL# 5751 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=57.5 DEG. = 0.0 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

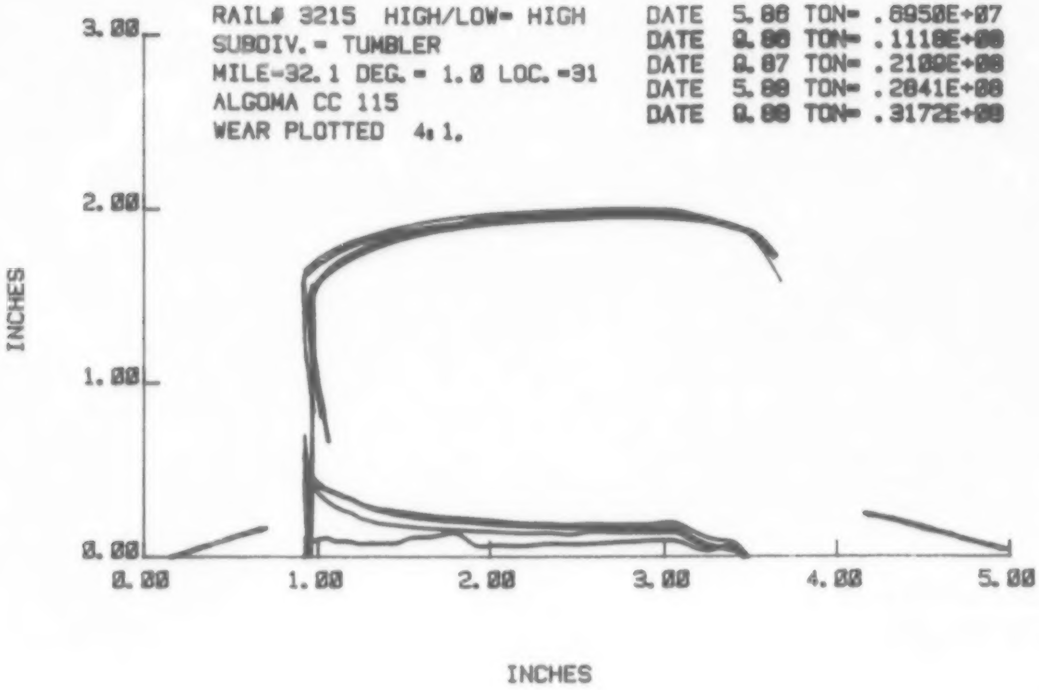

RAIL# 5752 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=57.5 DEG. = 0.0 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

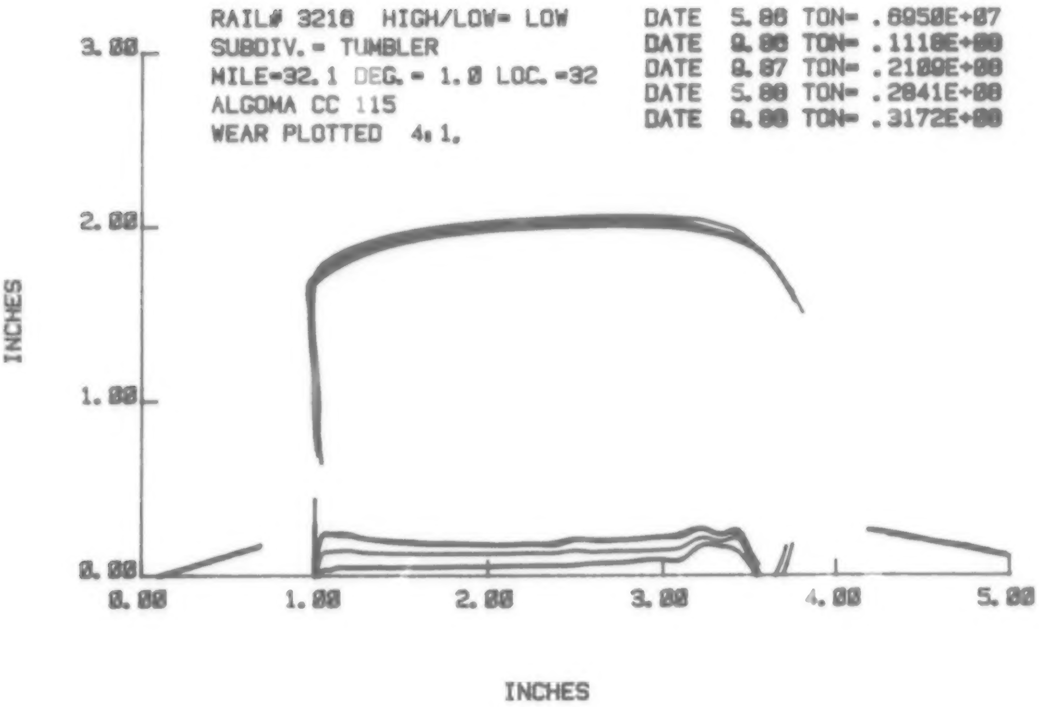

RAIL# 3211 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=32.1 DEG. = 1.0 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

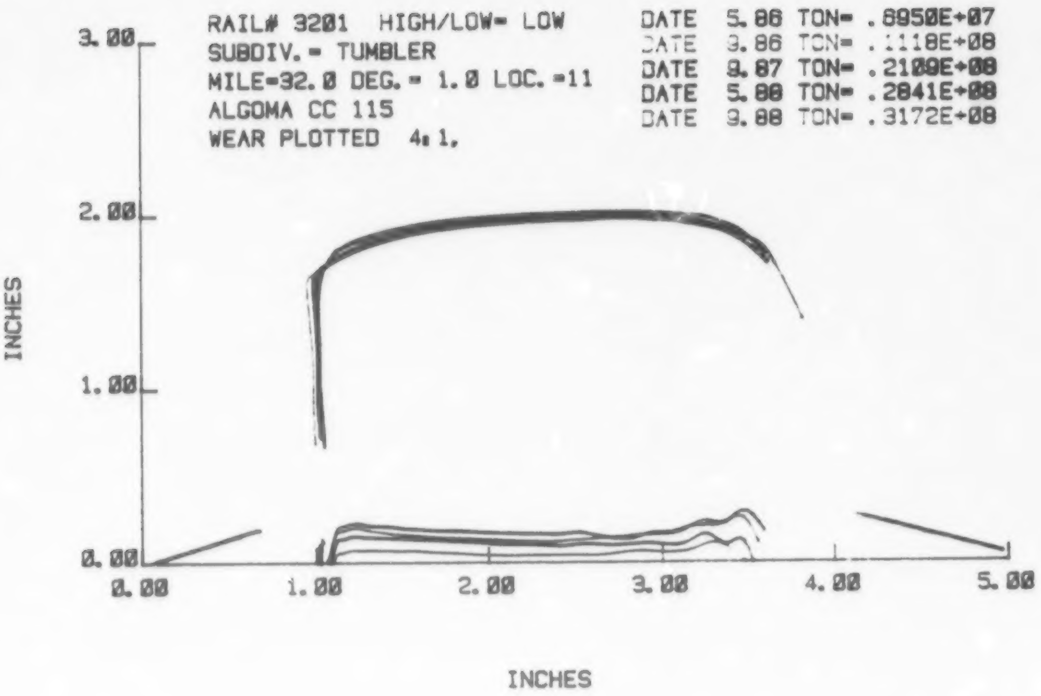

RAIL# 3212 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=32.1 DEG. = 1.0 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

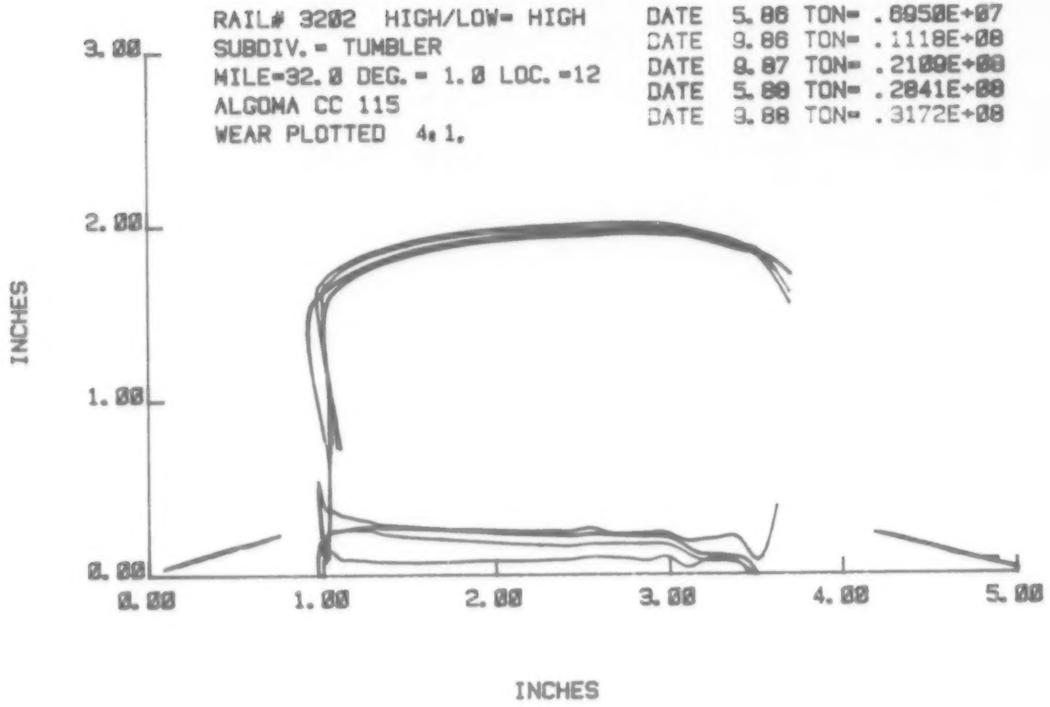

RAIL# 3213 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=32.1 DEG. = 1.0 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

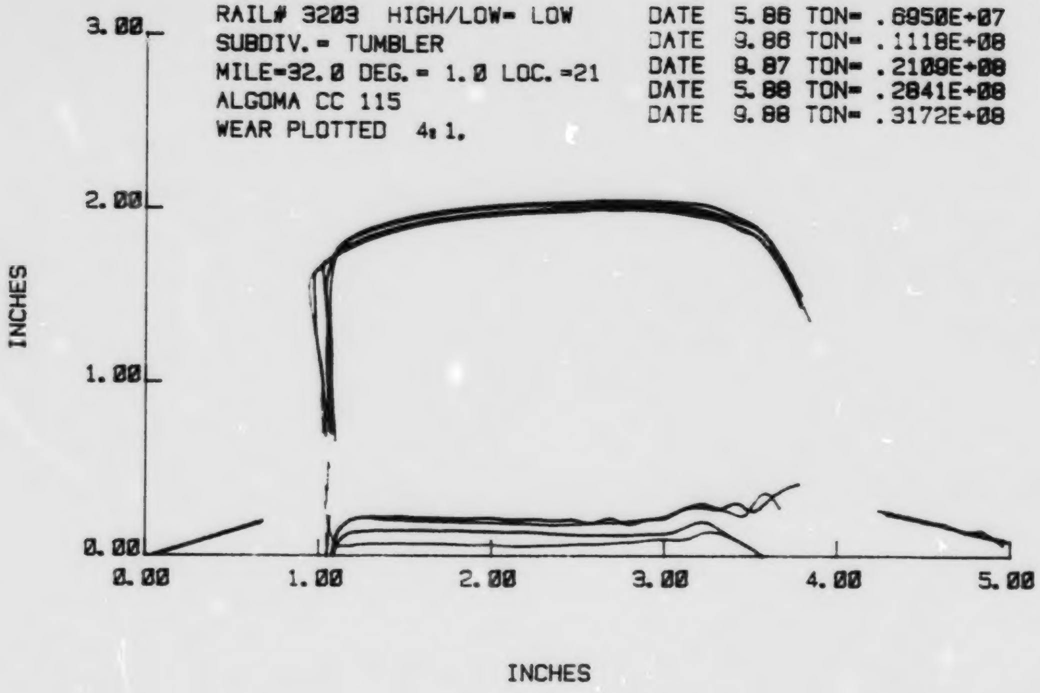

RAIL# 3214 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=32.1 DEG. = 1.0 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.88 TON= .6950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES


RAIL# 3215 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=32.1 DEG. = 1.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 8.86 TON= .1110E+08
DATE 8.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 8.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES


RAIL# 3216 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=32.1 DEG. = 1.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 8.86 TON= .1110E+08
DATE 8.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 8.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

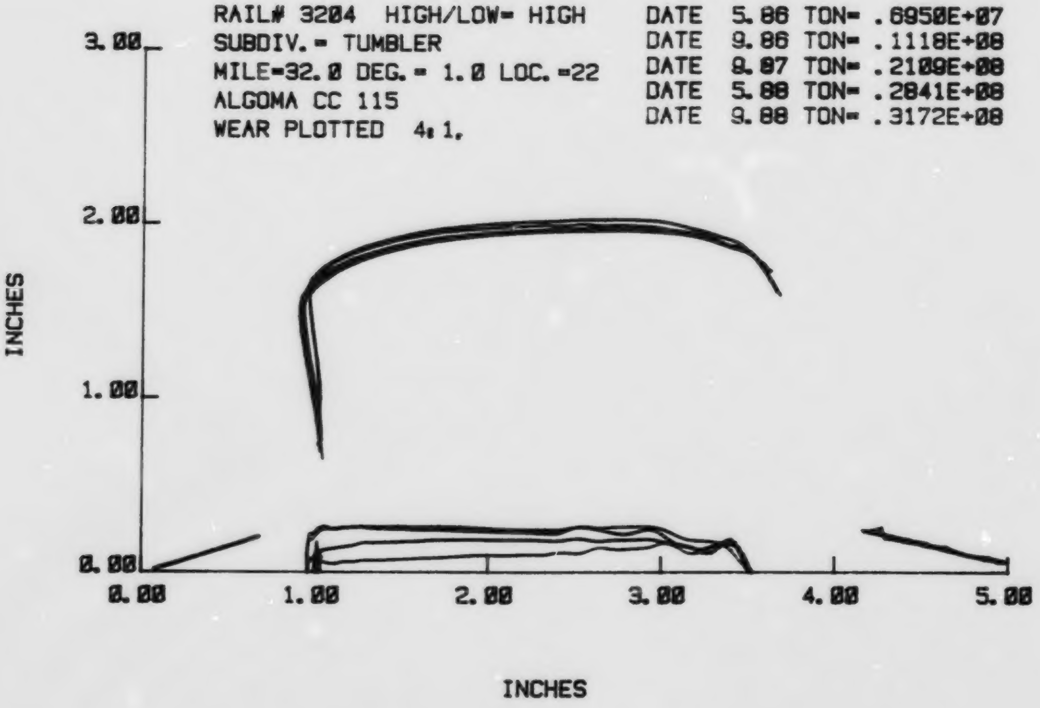

RAIL# 3201 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=32.0 DEG. = 1.0 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .8950E+07
DATE 9.86 TON= .1118E+08
DATE 8.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES


RAIL# 3202 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=32.0 DEG. = 1.0 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .8950E+07
DATE 9.86 TON= .1118E+08
DATE 8.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES



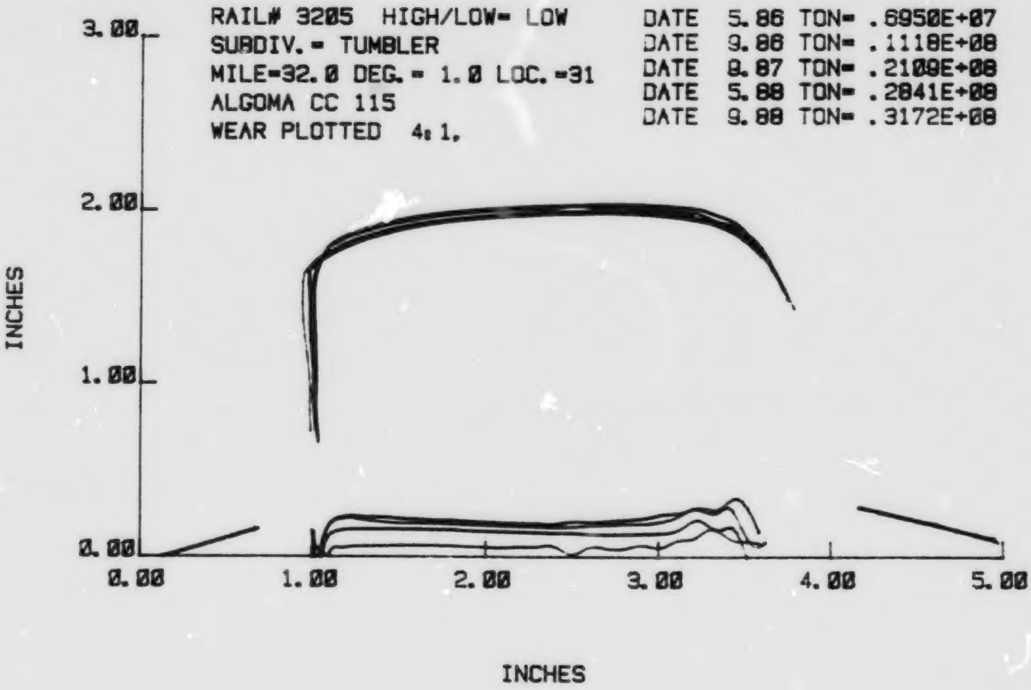
RAIL# 3203 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=32.0 DEG. = 1.0 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4: 1.

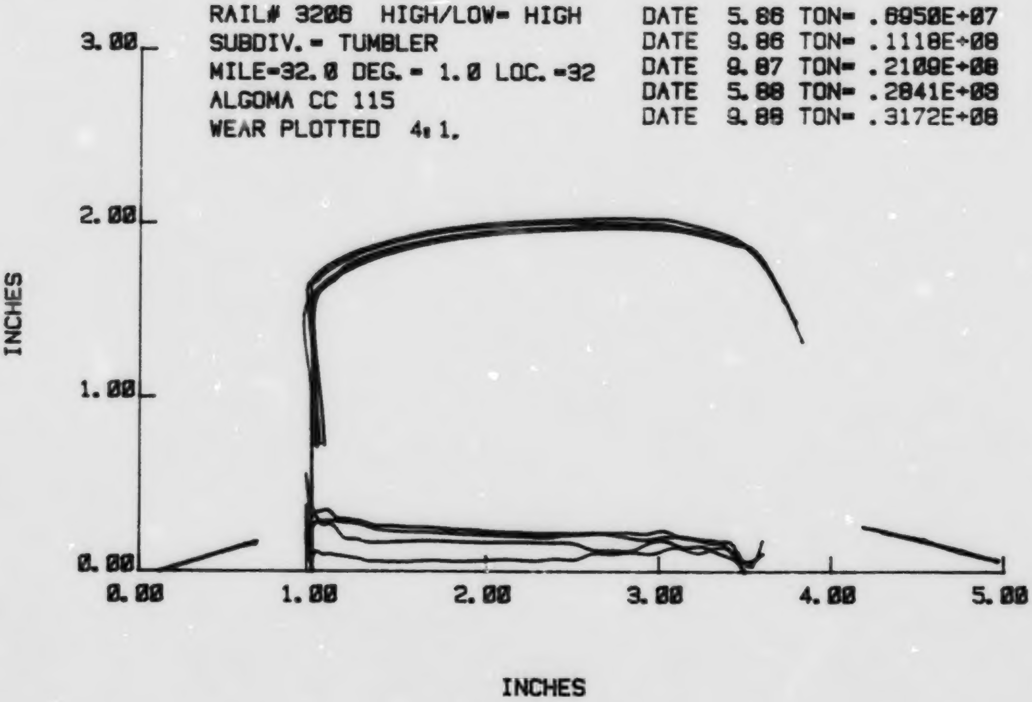
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 8.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08

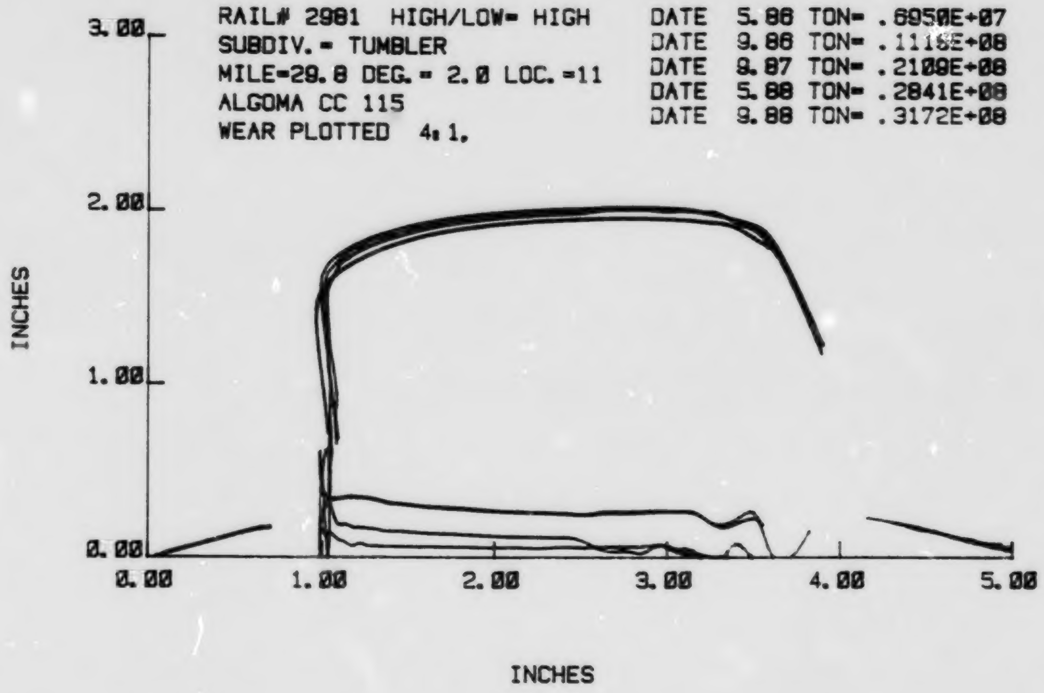


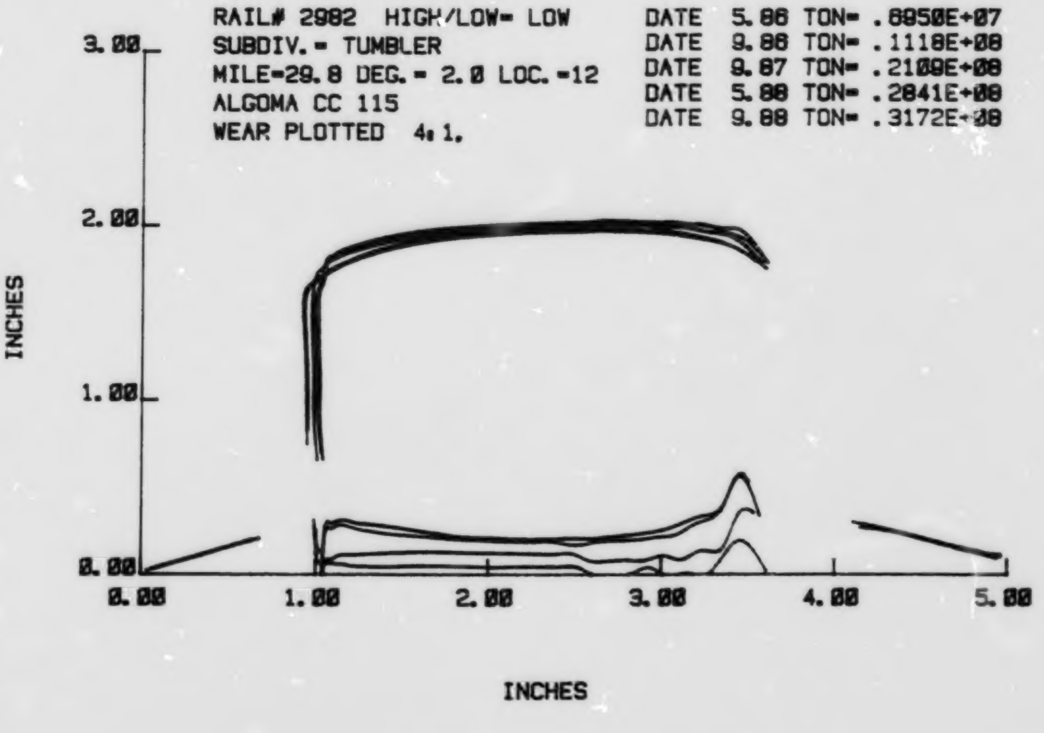
RAIL# 3204 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=32.0 DEG. = 1.0 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4: 1.

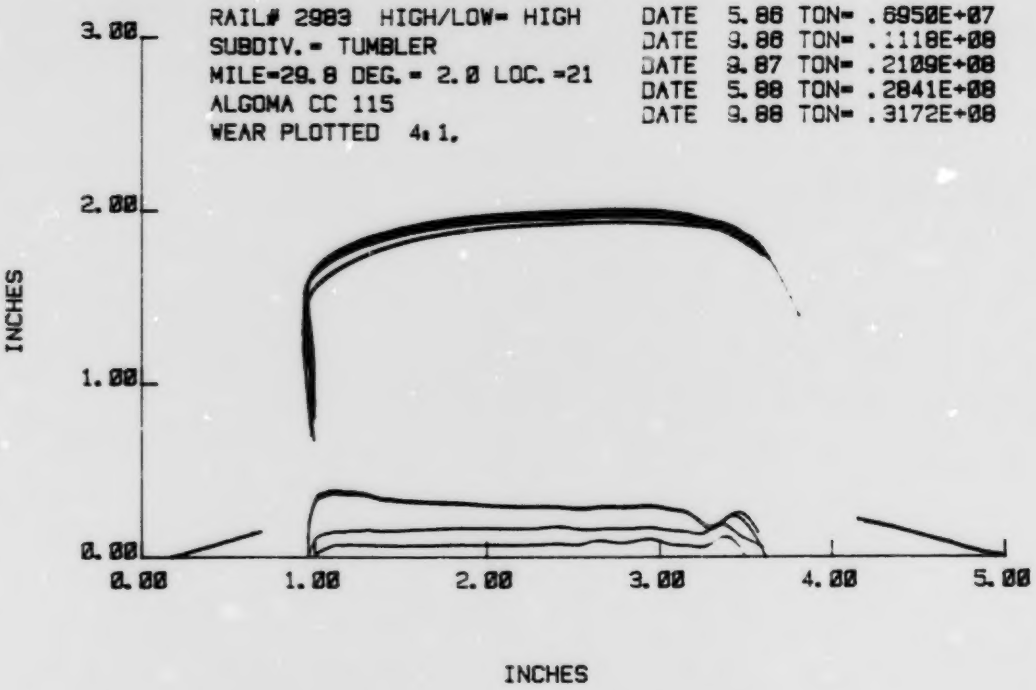
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 8.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08

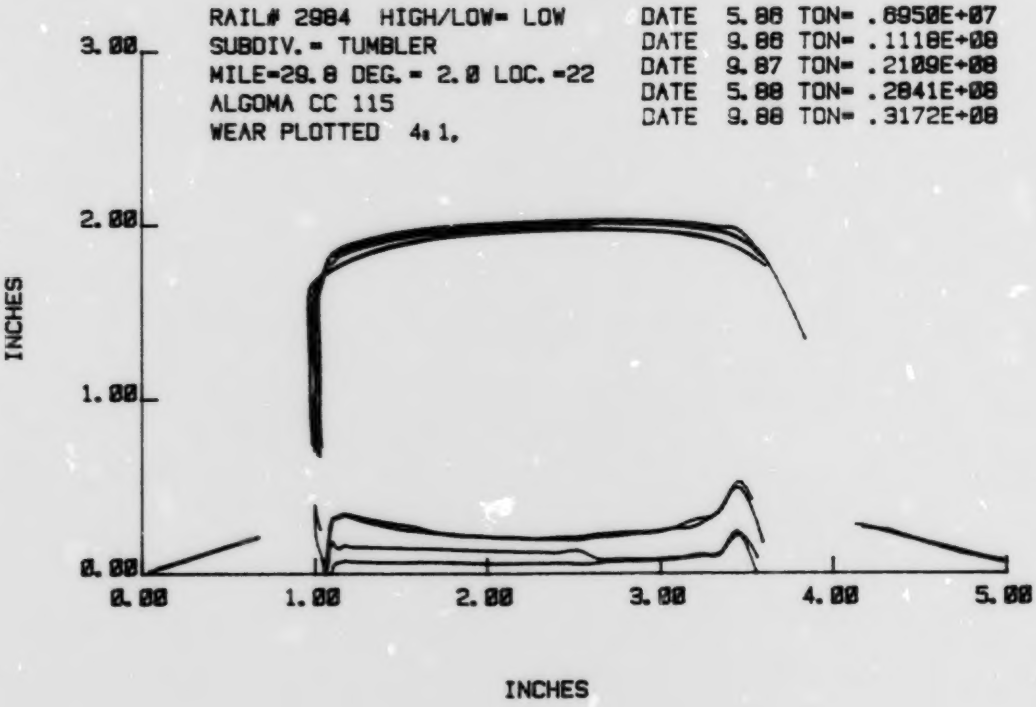

RAIL# 3205 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=32.0 DEG. = 1.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 8.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

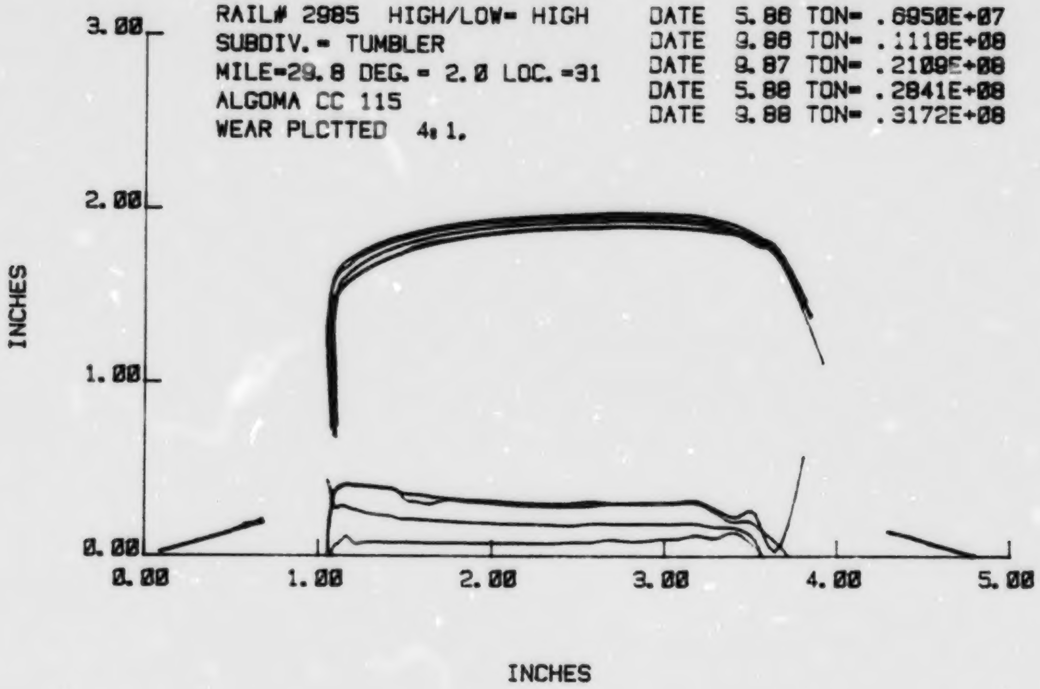

RAIL# 3206 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=32.0 DEG. = 1.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 8.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

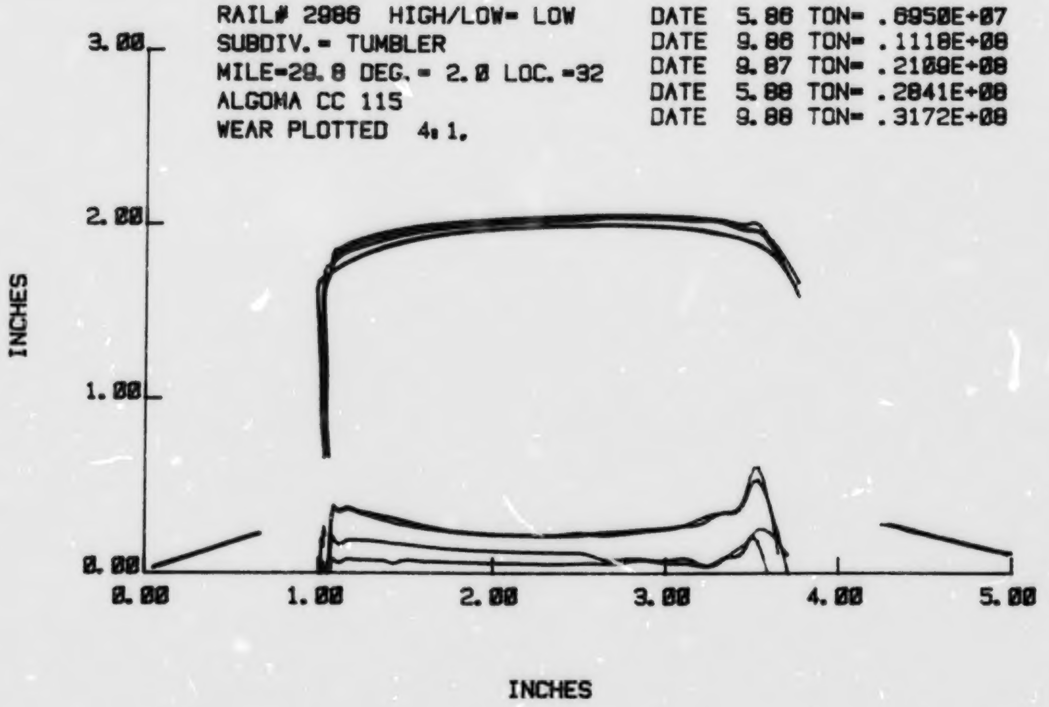

RAIL# 2981 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=29.8 DEG. = 2.0 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 8.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

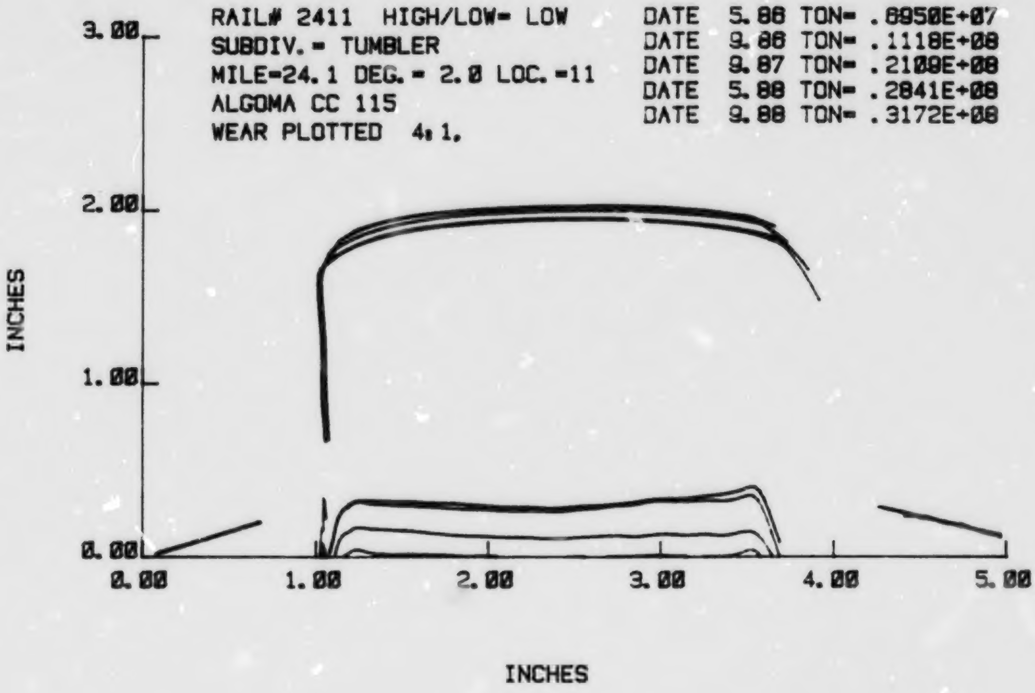

RAIL# 2982 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=29.8 DEG. = 2.0 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 8.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

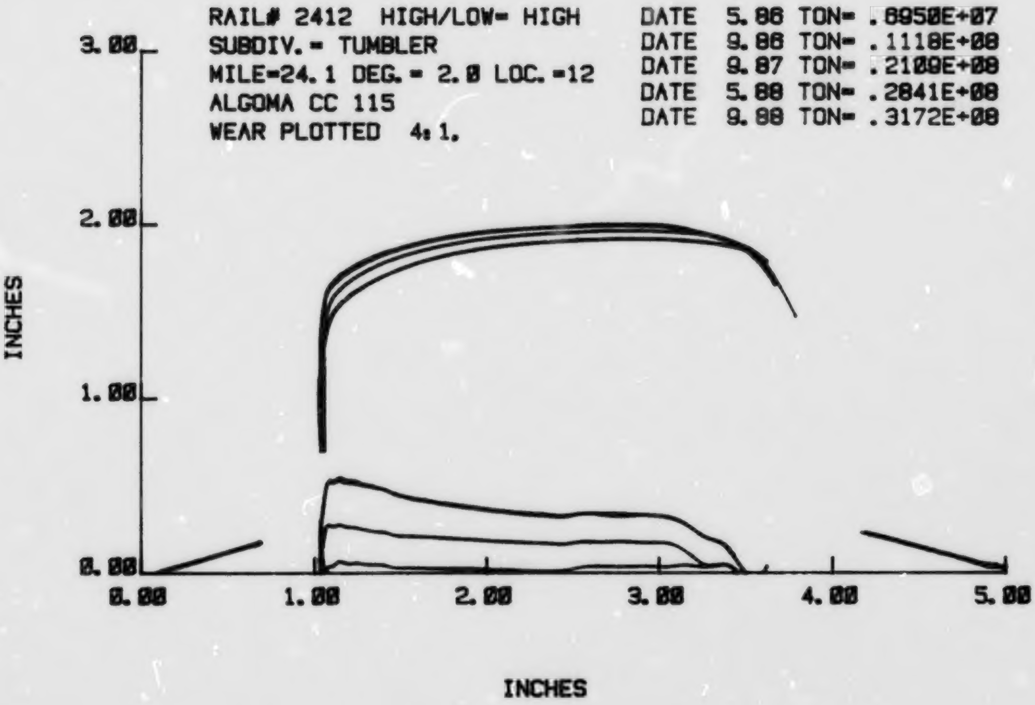

RAIL# 2983 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=29.8 DEG. = 2.0 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

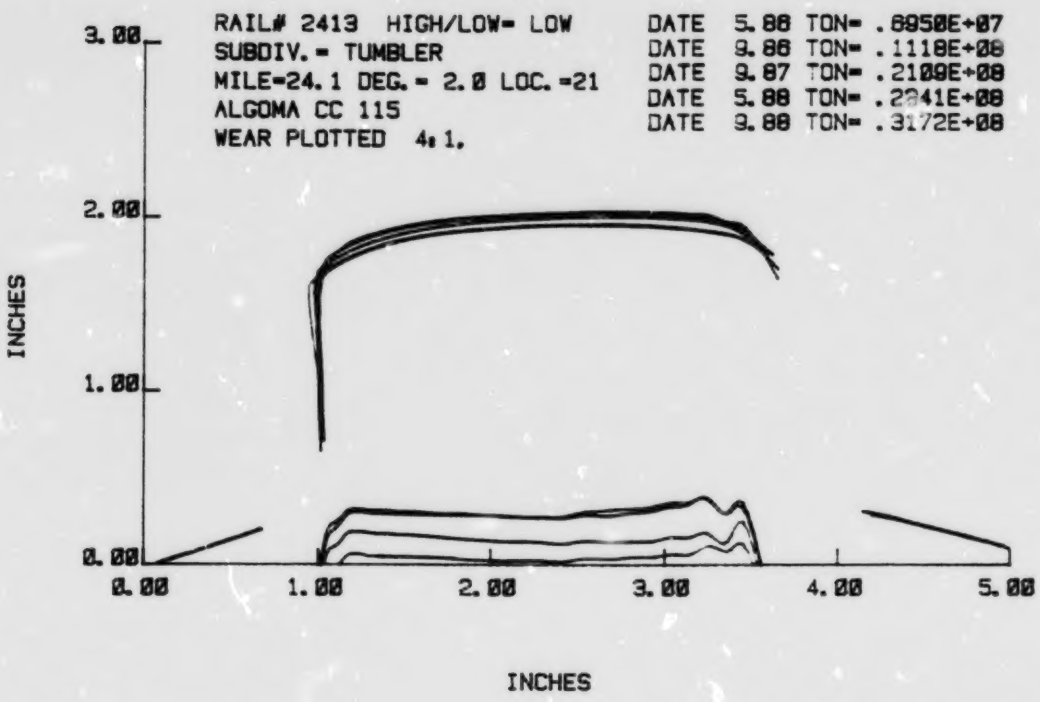

RAIL# 2984 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=29.8 DEG. = 2.0 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

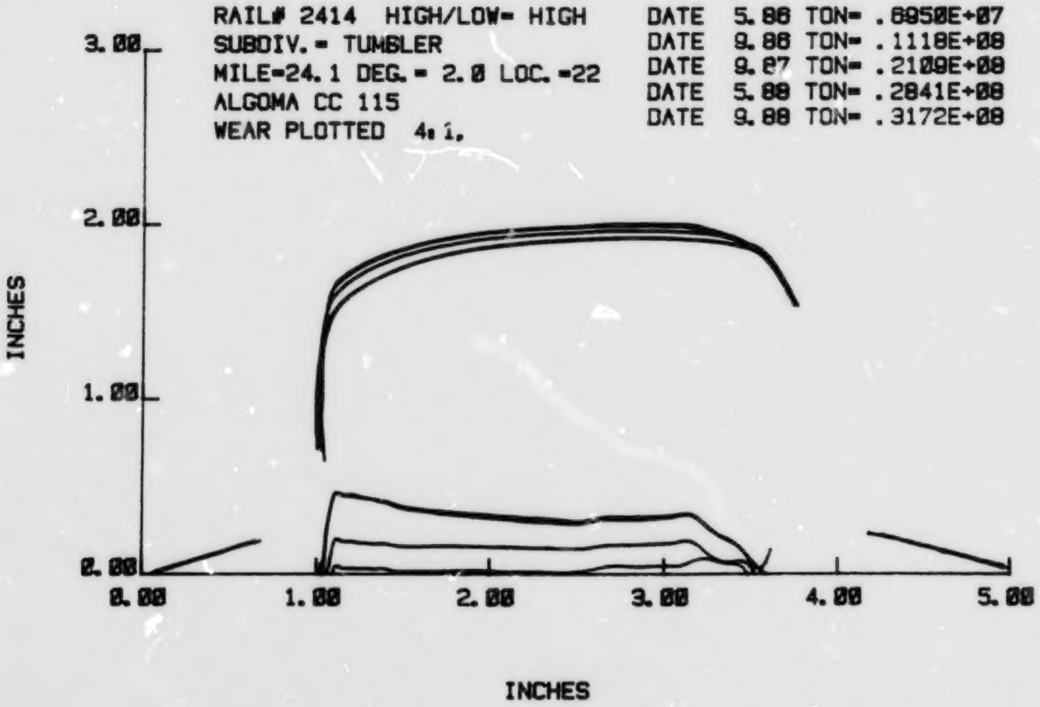

RAIL# 2985 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=29.8 DEG. = 2.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

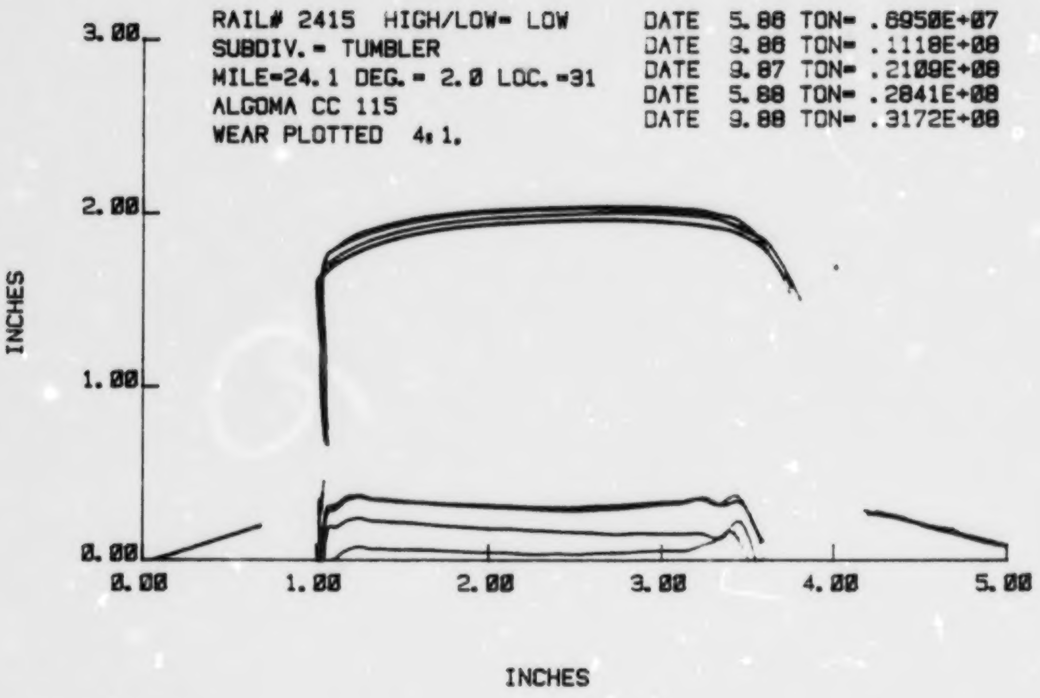

RAIL# 2986 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=29.8 DEG. = 2.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

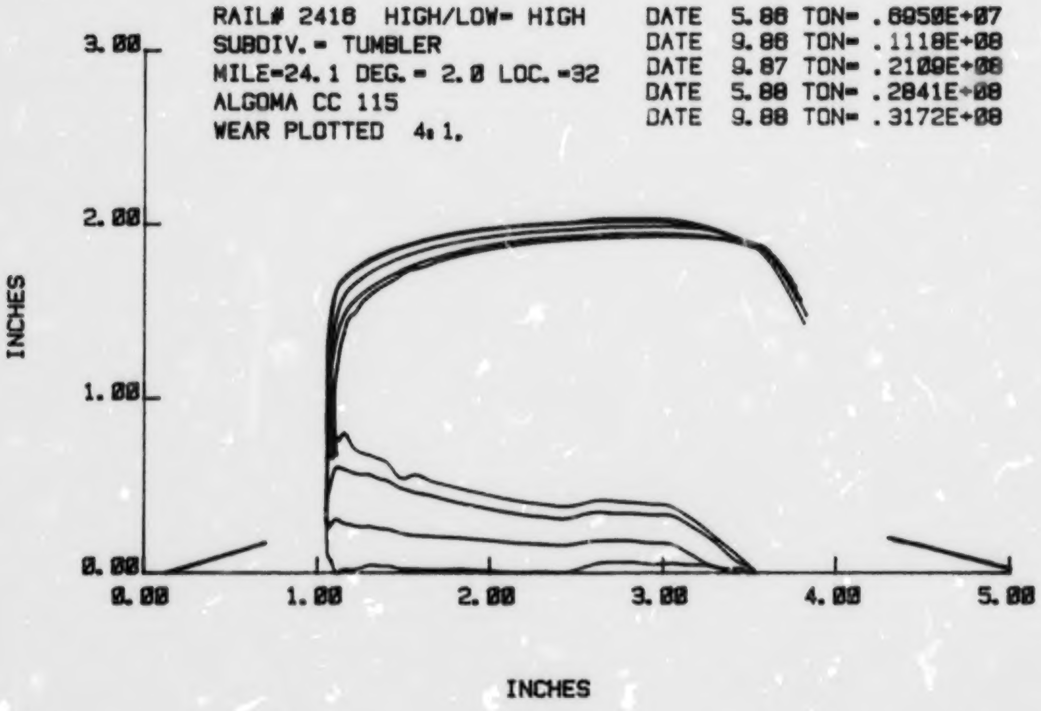

RAIL# 2411 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=24.1 DEG. = 2.0 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .8950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

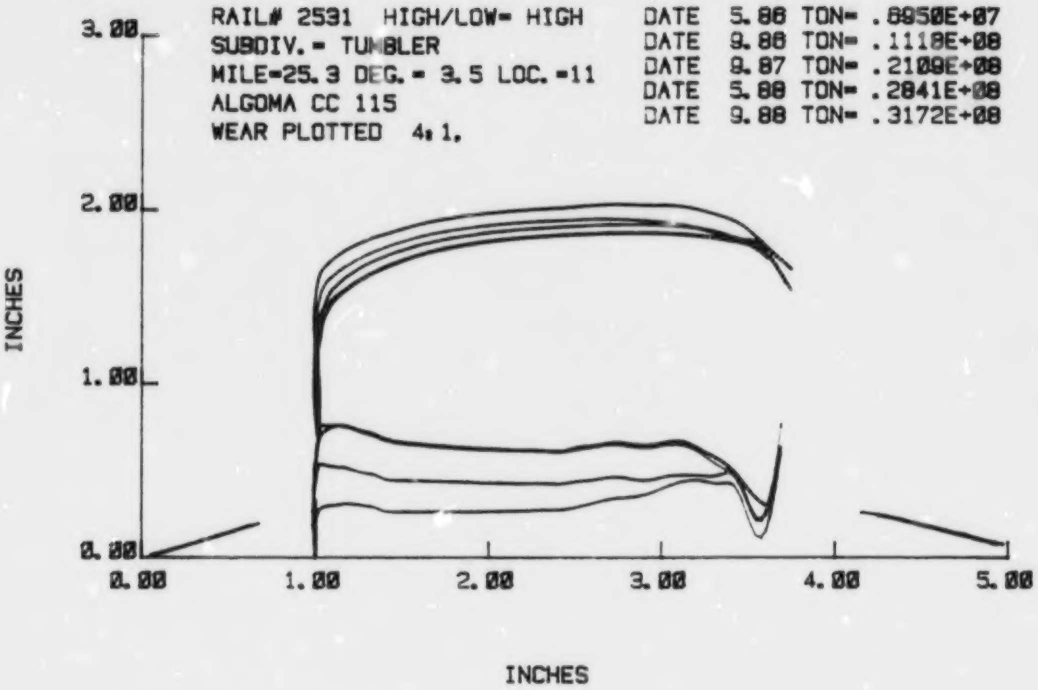

RAIL# 2412 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=24.1 DEG. = 2.0 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .8950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

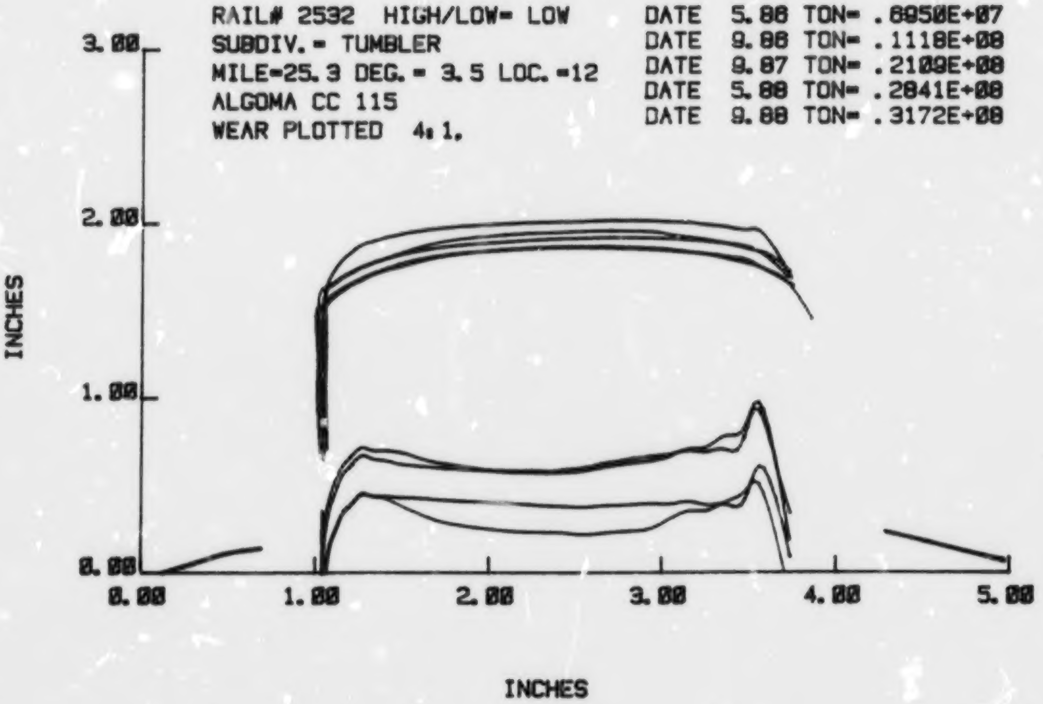

RAIL# 2413 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=24.1 DEG. = 2.0 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

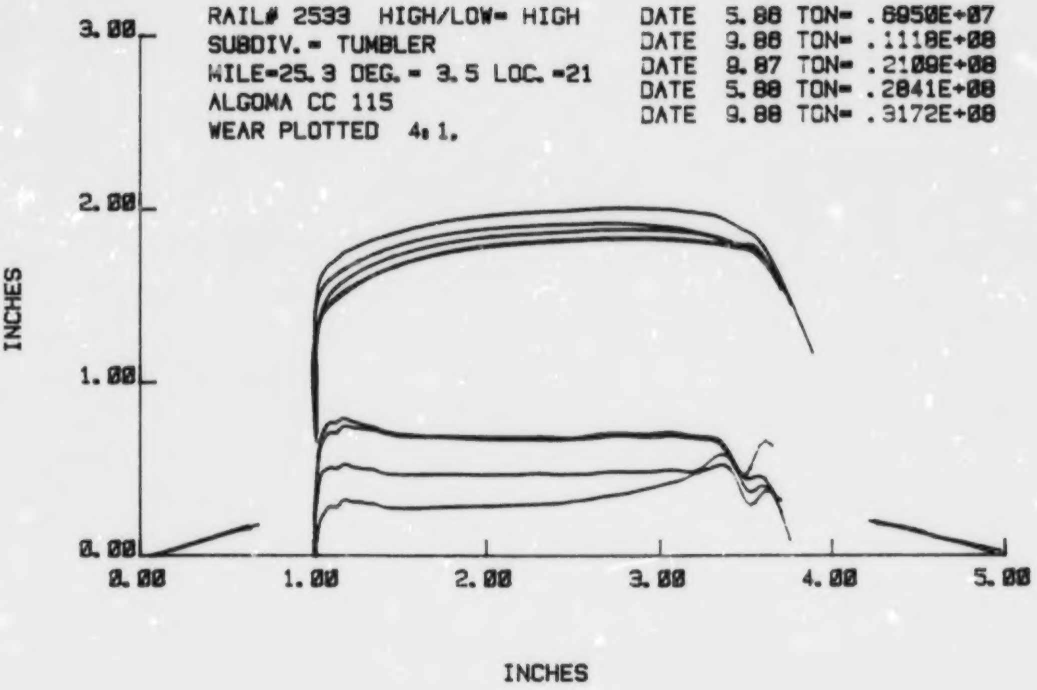

RAIL# 2414 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=24.1 DEG. = 2.0 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

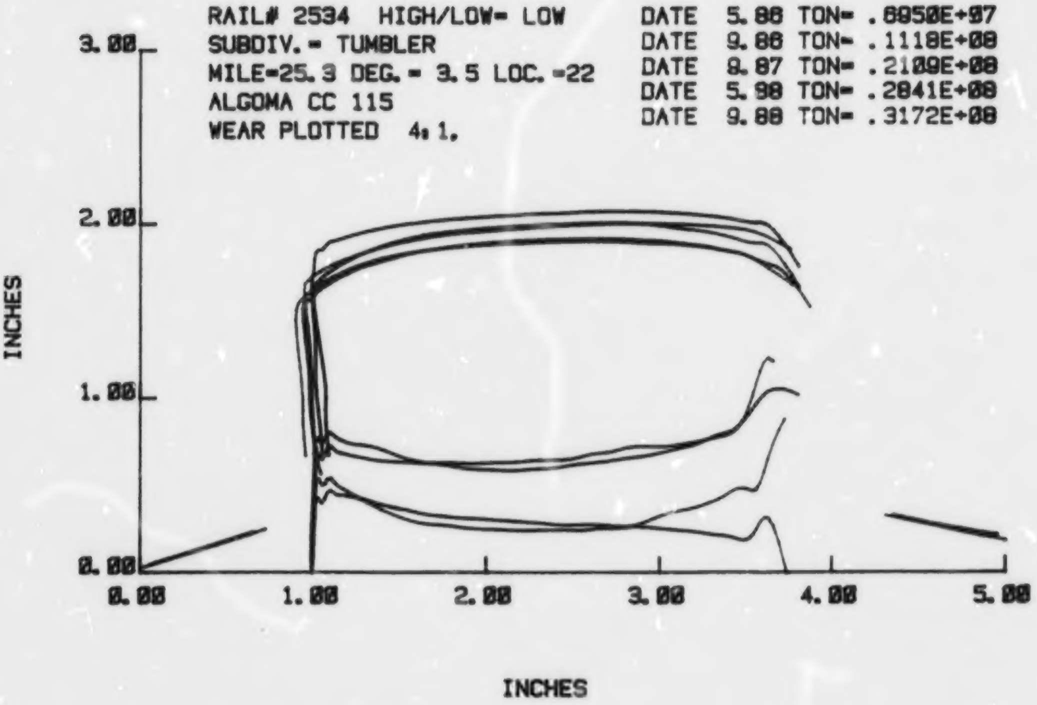

RAIL# 2415 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=24.1 DEG. = 2.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 3.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

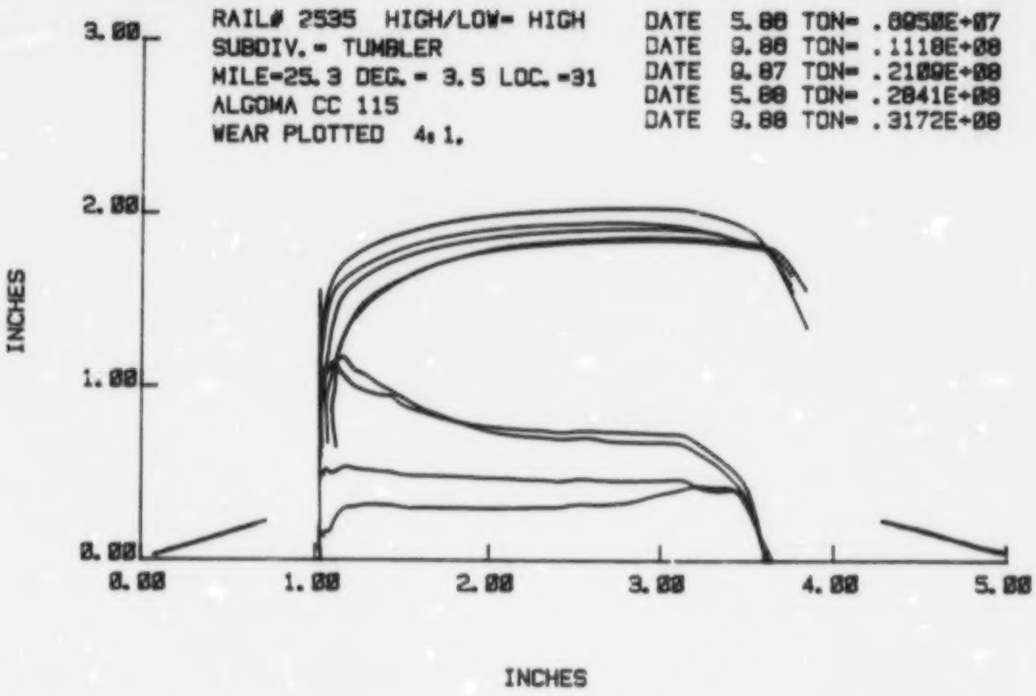

RAIL# 2416 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=24.1 DEG. = 2.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

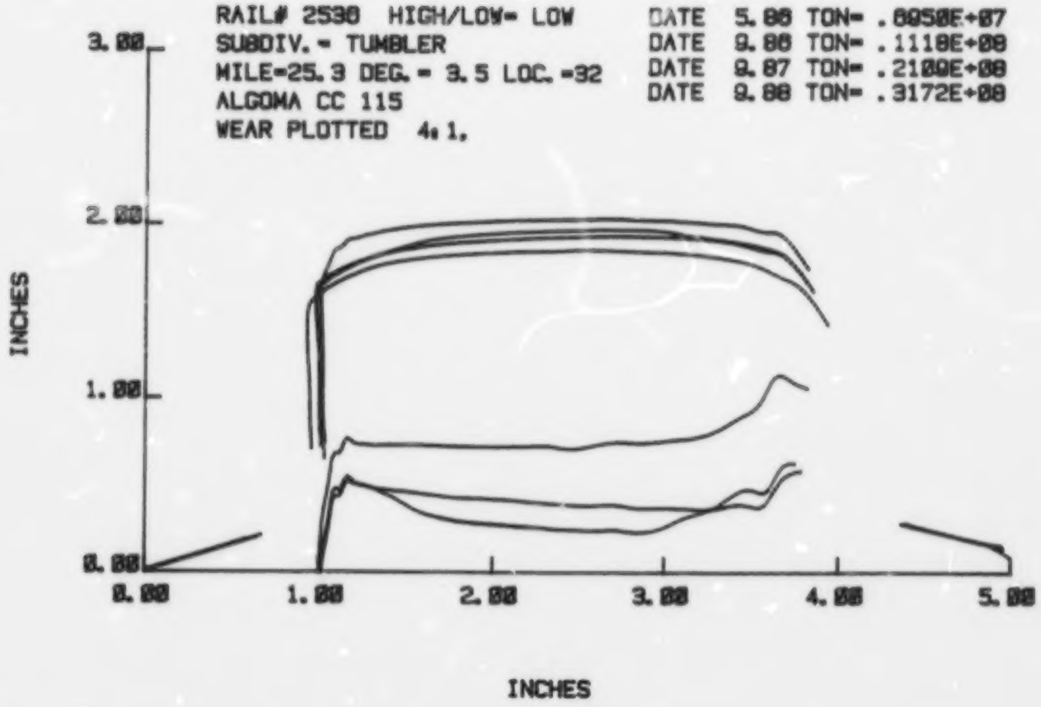

RAIL# 2531 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=25.3 DEG. = 3.5 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.88 TON= .6950E+07
DATE 9.88 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

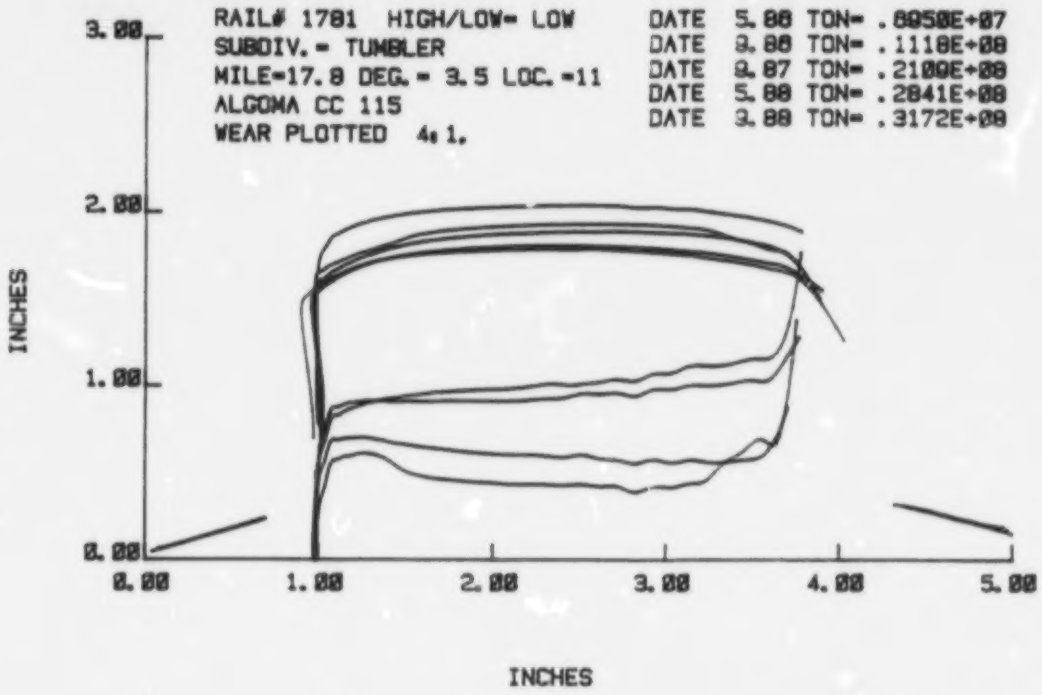

RAIL# 2532 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=25.3 DEG. = 3.5 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.88 TON= .6950E+07
DATE 9.88 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

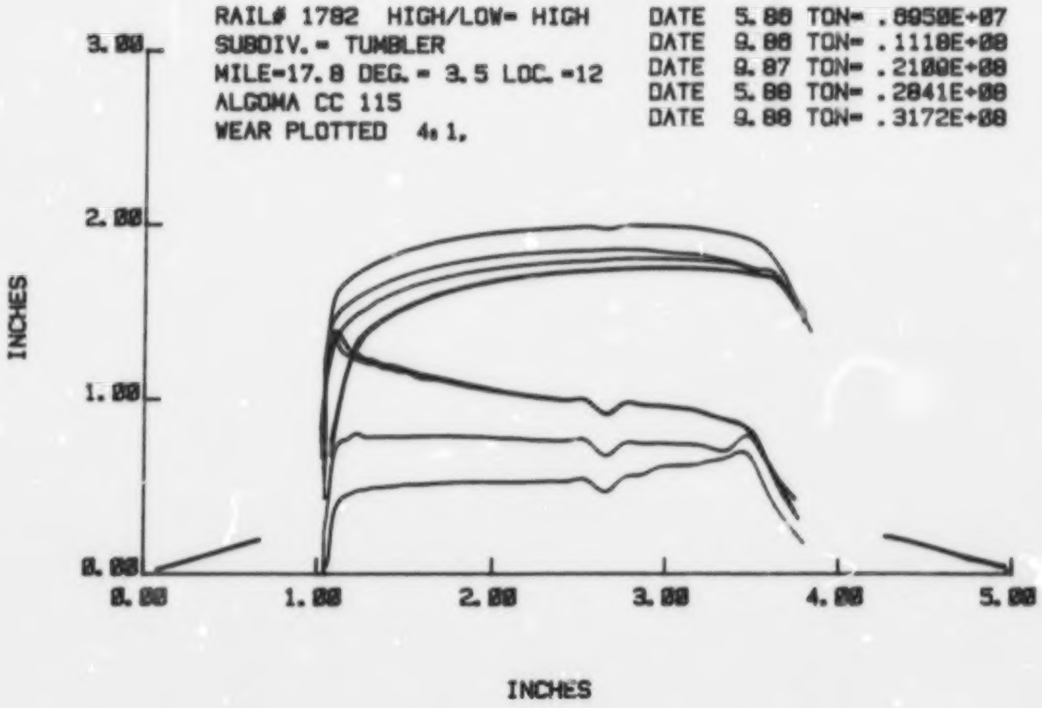

RAIL# 2533 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=25.3 DEG. = 3.5 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.88 TON= .6950E+07
DATE 9.88 TON= .1118E+08
DATE 8.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

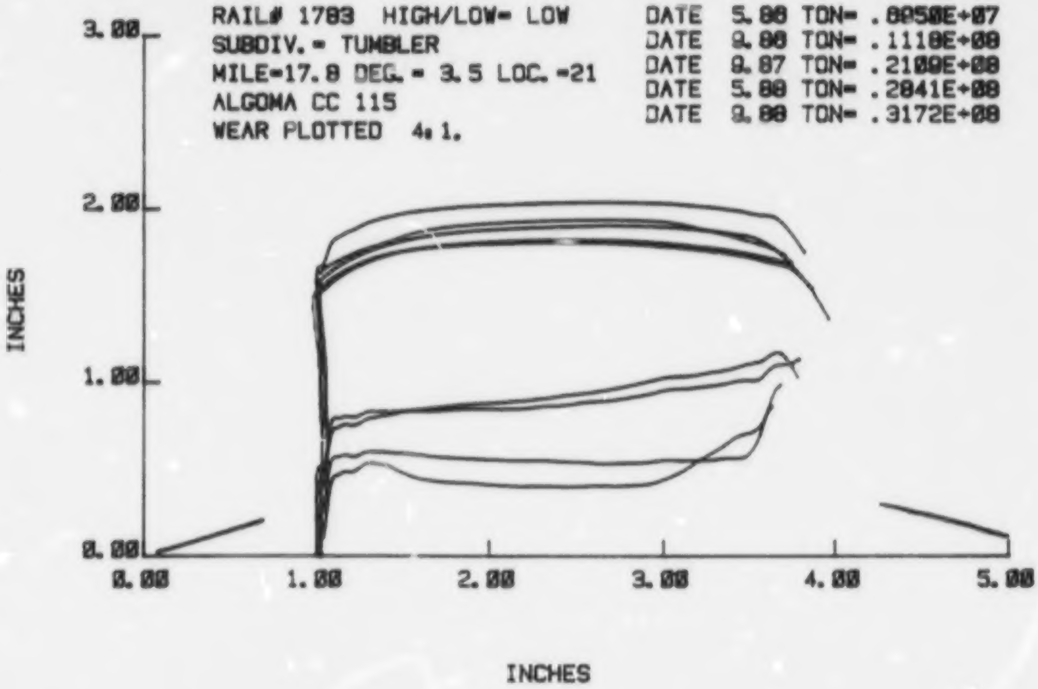

RAIL# 2534 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=25.3 DEG. = 3.5 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.88 TON= .6950E+07
DATE 9.88 TON= .1118E+08
DATE 8.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

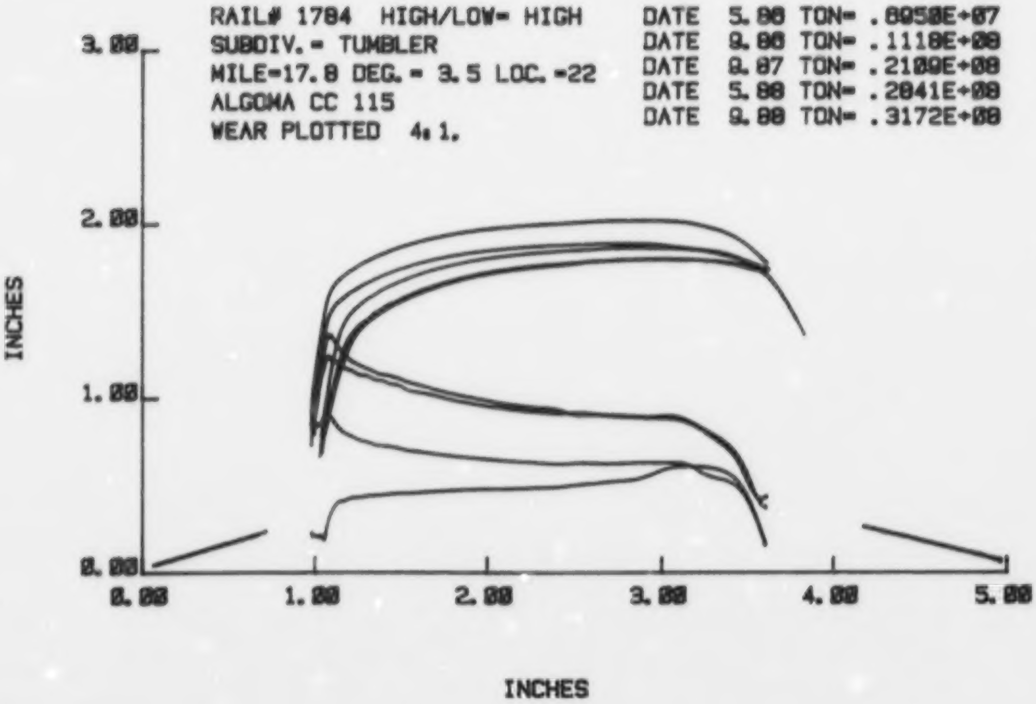

RAIL# 2535 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=25.3 DEG. = 3.5 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .0950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

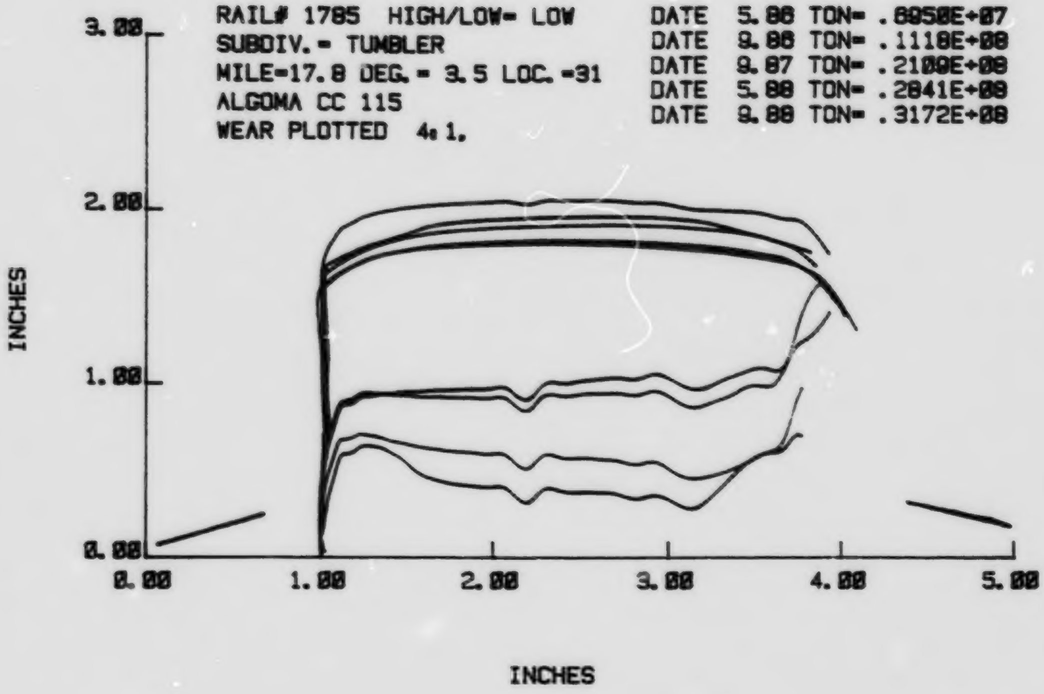

RAIL# 2530 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=25.3 DEG. = 3.5 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .0950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

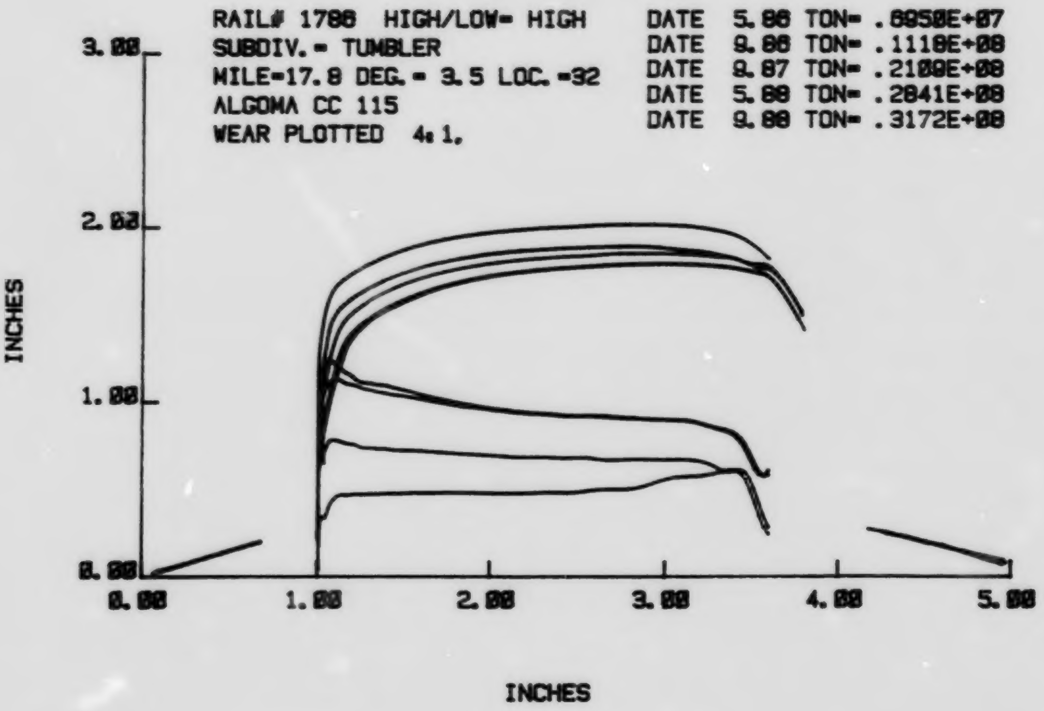

RAIL# 1781 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=17.8 DEG. = 3.5 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.88 TON= .8950E+07
DATE 9.88 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

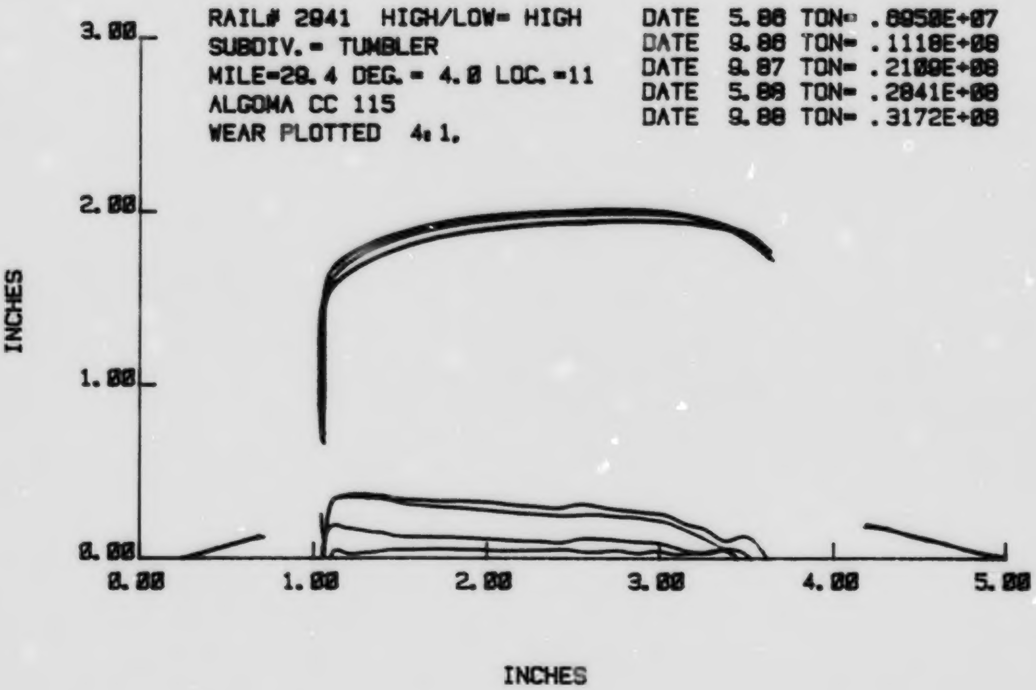

RAIL# 1782 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=17.8 DEG. = 3.5 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.88 TON= .8950E+07
DATE 9.88 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

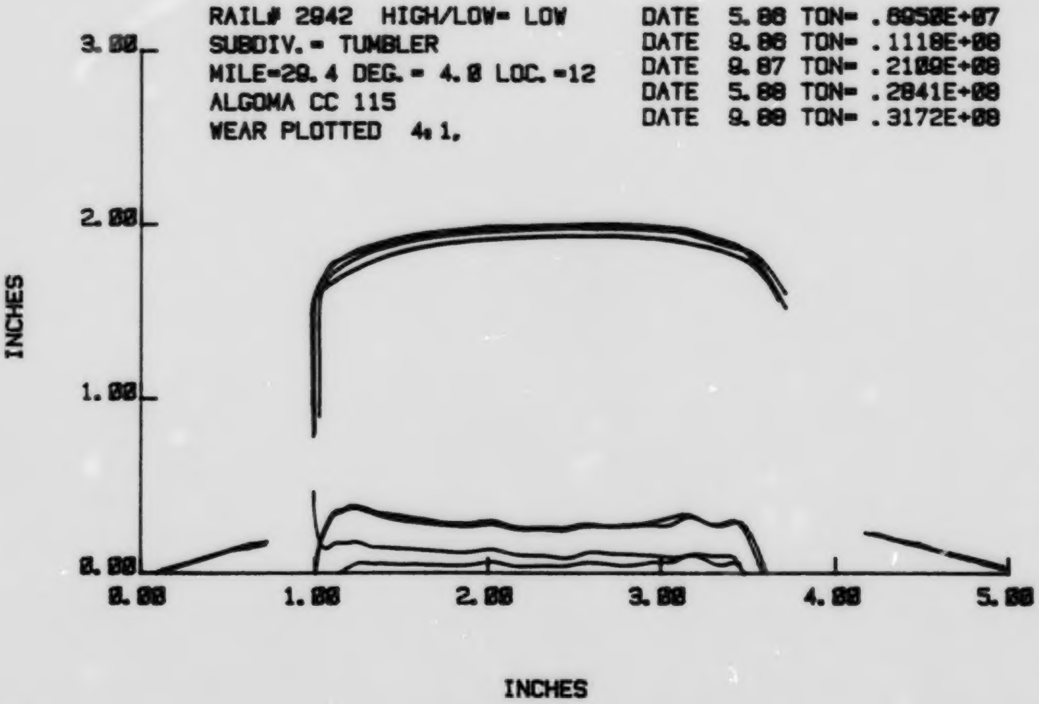

RAIL# 1783 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=17.8 DEG. = 3.5 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .8050E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

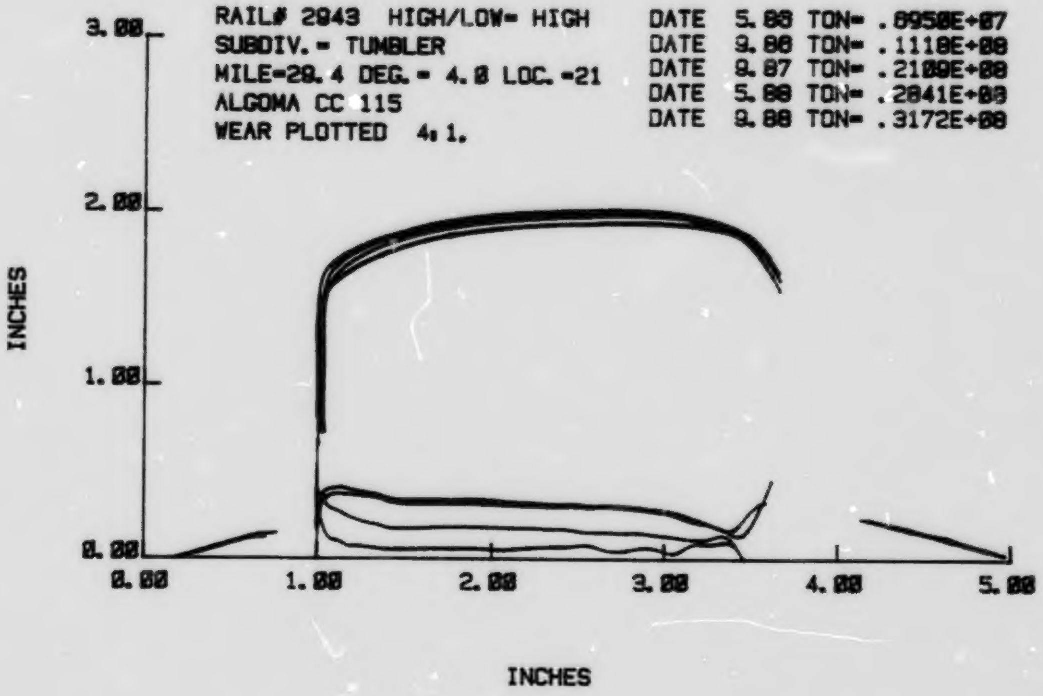

RAIL# 1784 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=17.8 DEG. = 3.5 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .8050E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

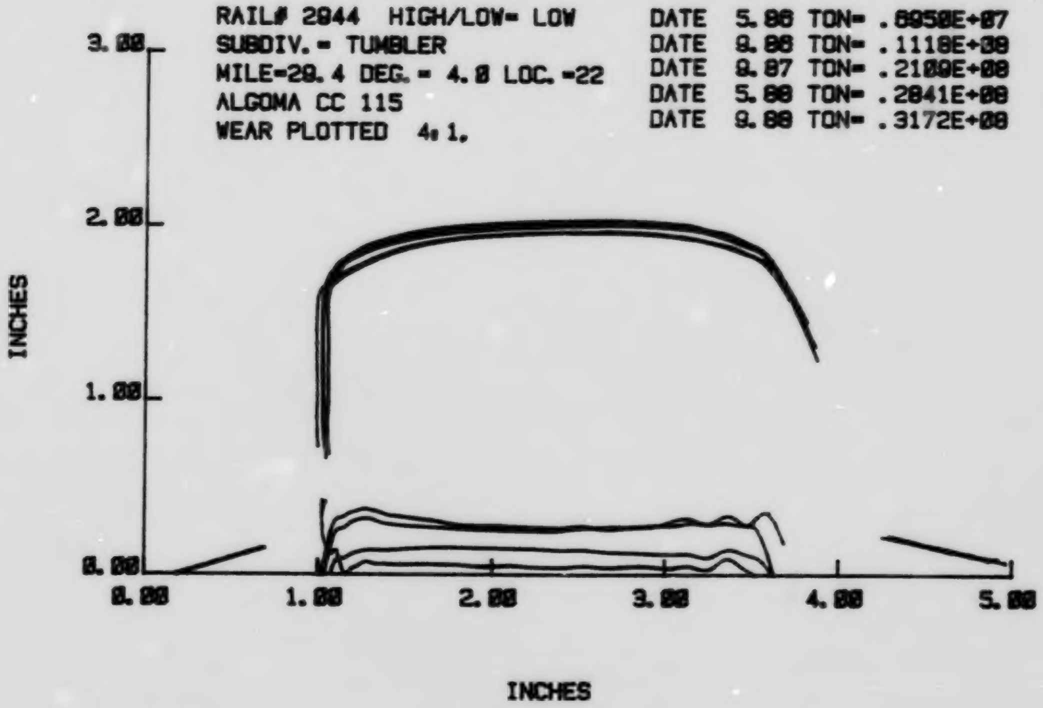

RAIL# 1785 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=17.8 DEG. = 3.5 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

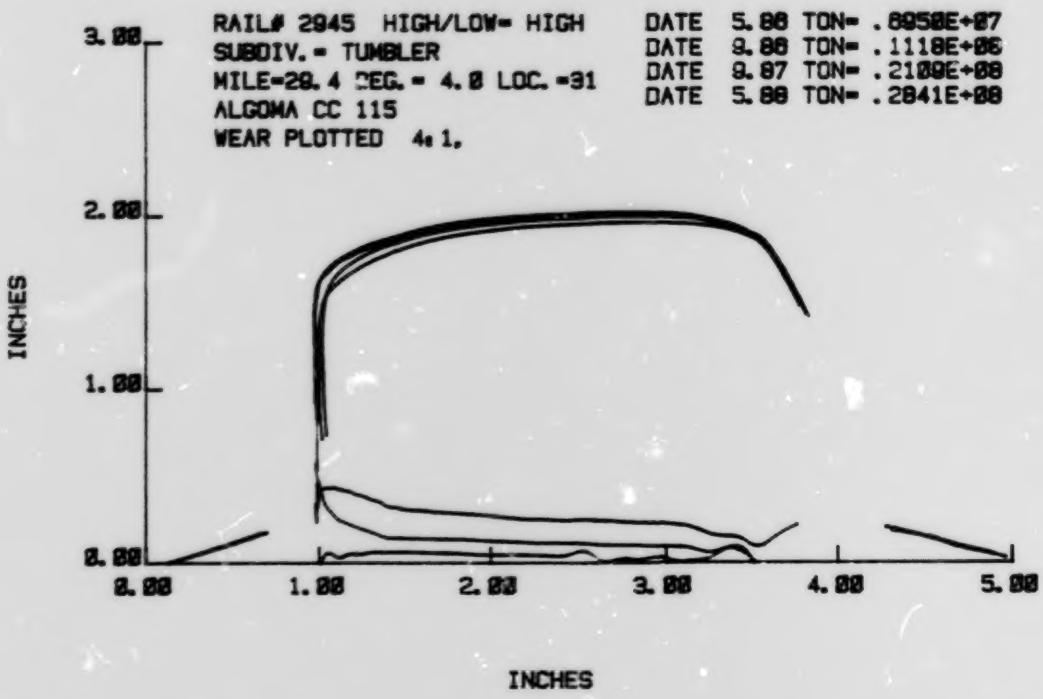

RAIL# 1786 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=17.8 DEG. = 3.5 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

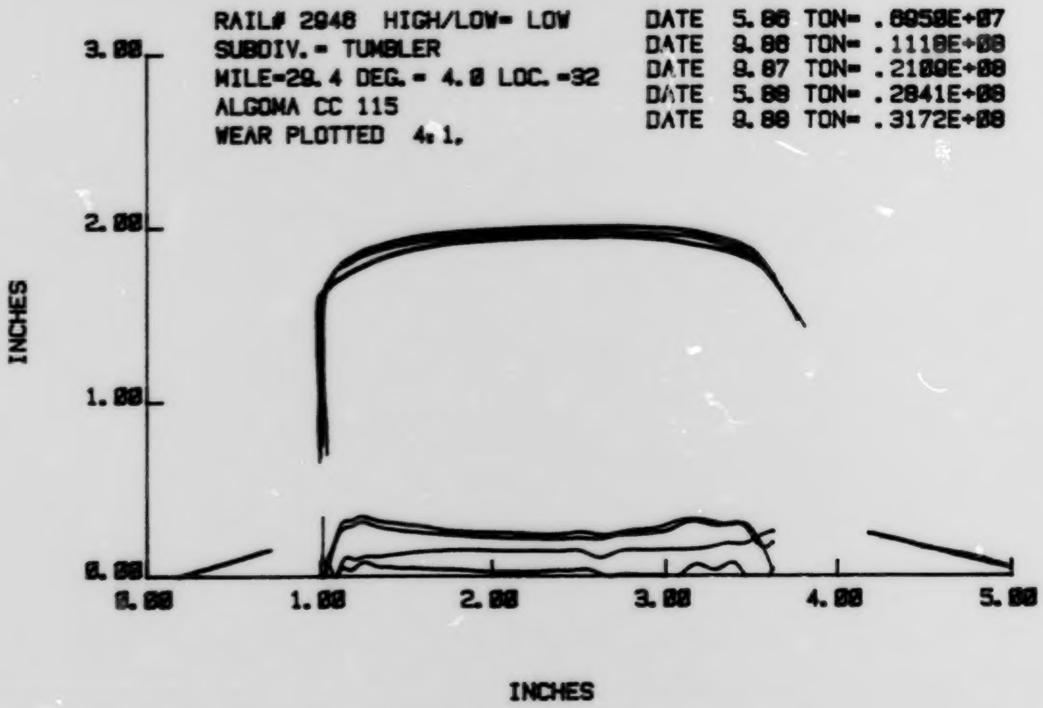

RAIL# 2041 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=20.4 DEG. = 4.0 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2041E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

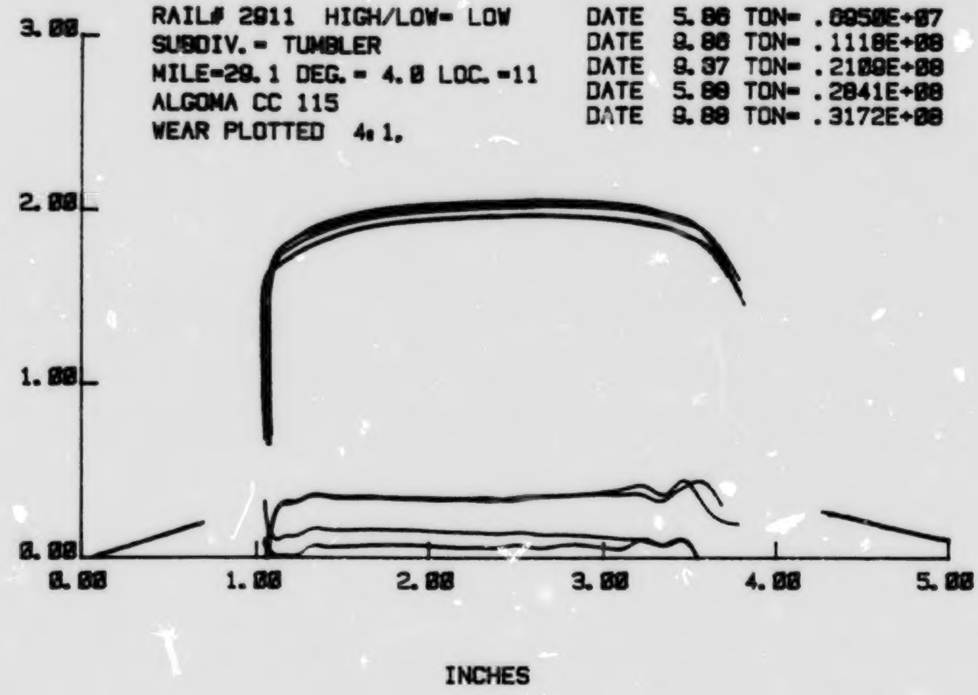

RAIL# 2042 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=20.4 DEG. = 4.0 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2041E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

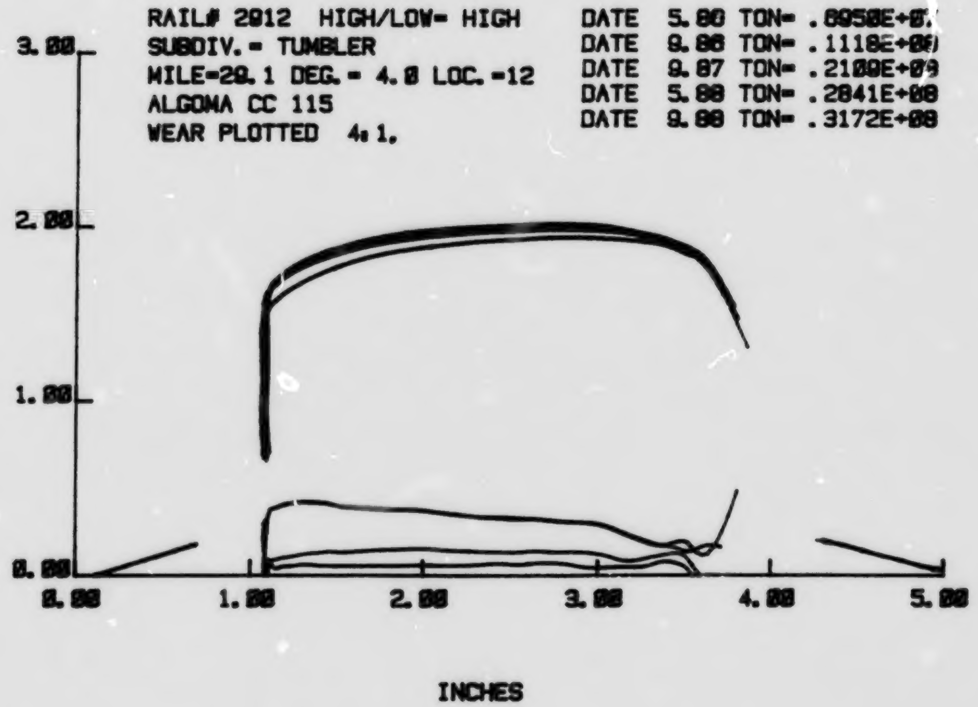

RAIL# 2043 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=20.4 DEG. = 4.0 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

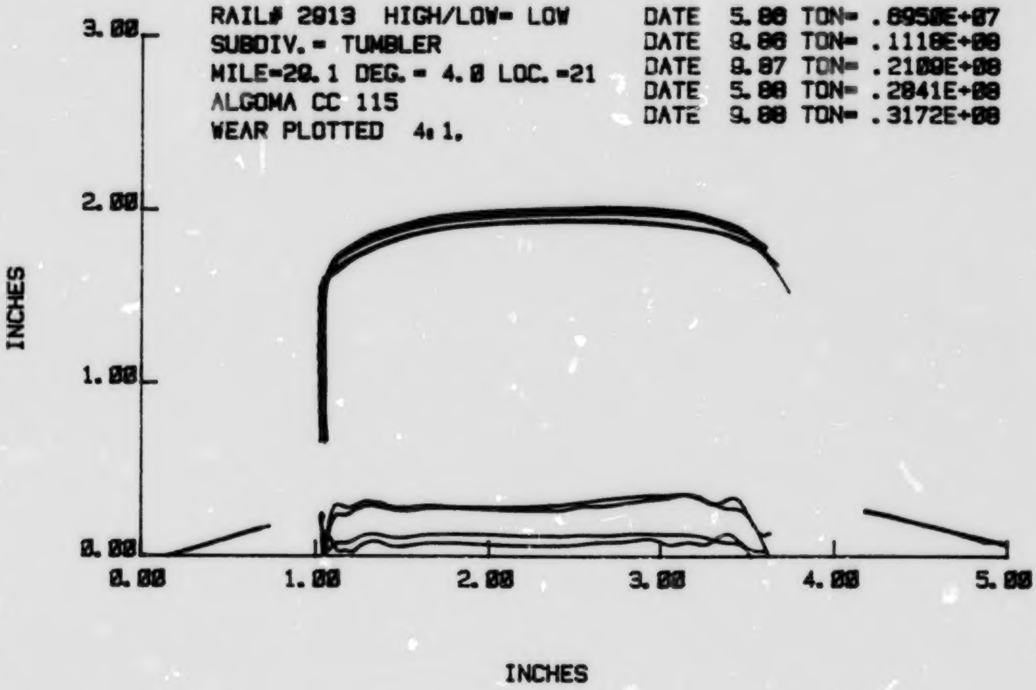

RAIL# 2044 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=20.4 DEG. = 4.0 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

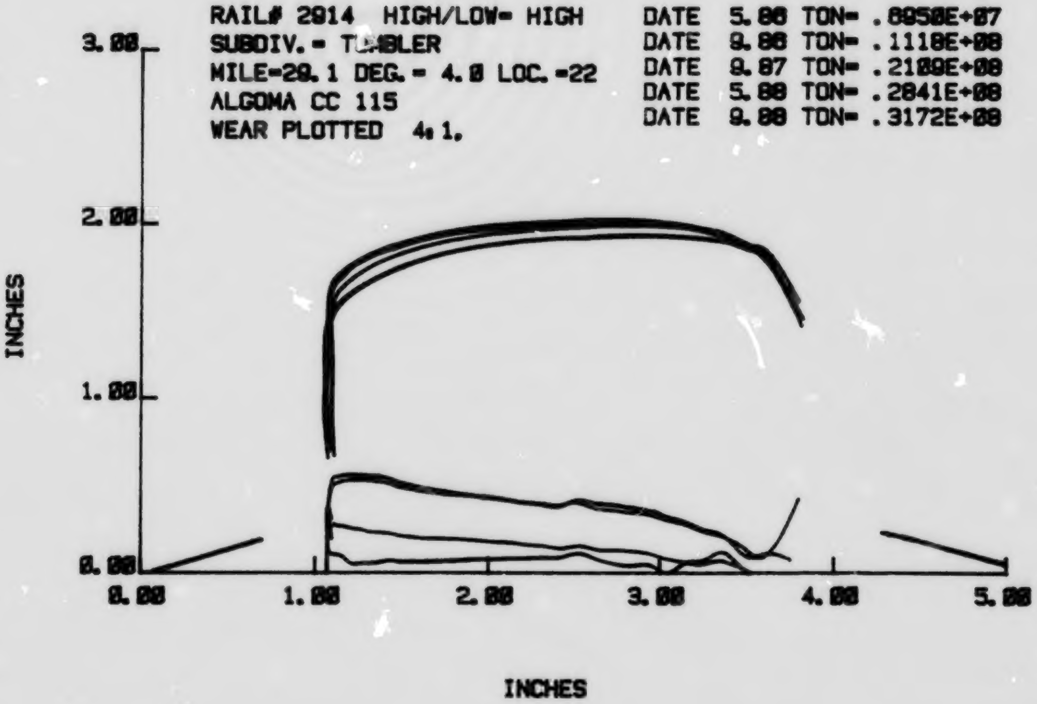

RAIL# 2945 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=29.4 DEG.= 4.0 LOC.=31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

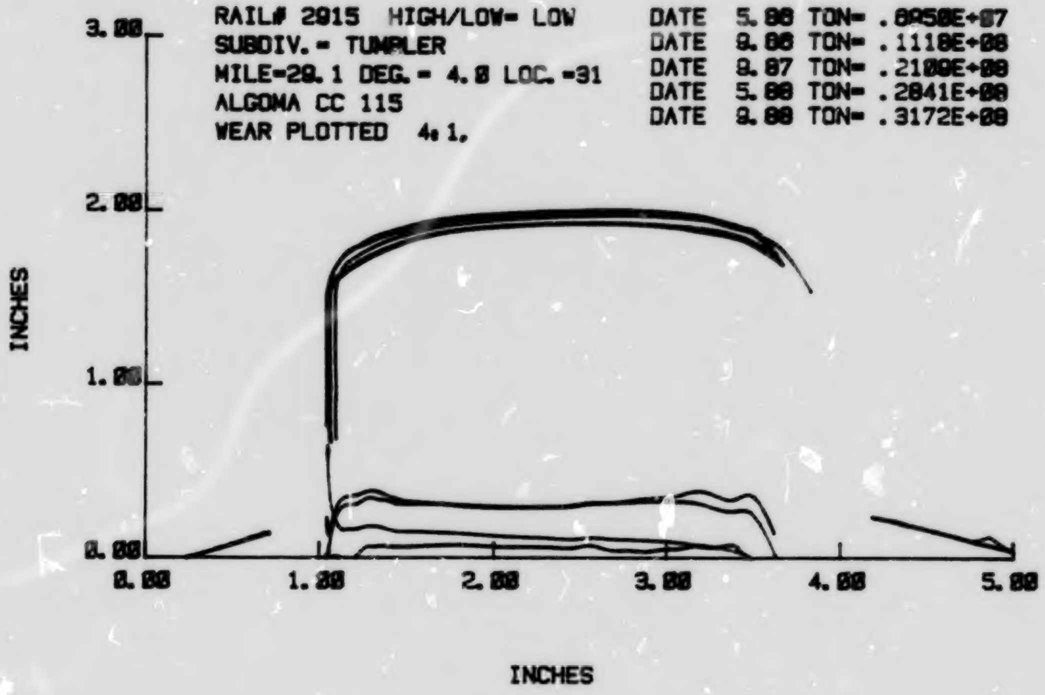

RAIL# 2946 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=29.4 DEG.= 4.0 LOC.=32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

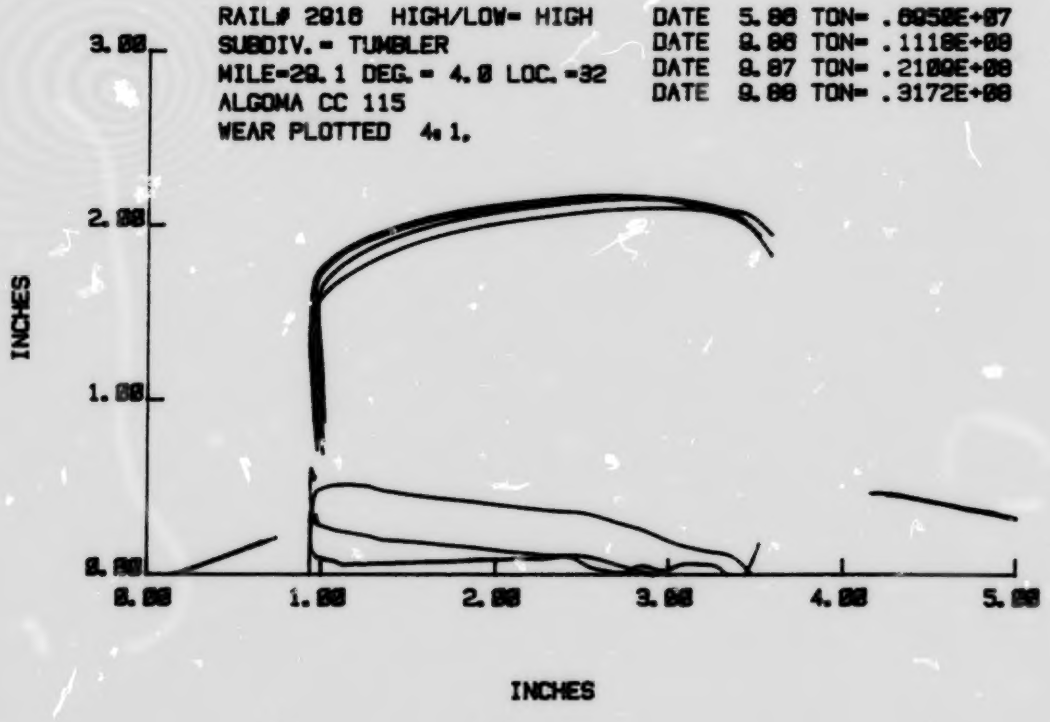

RAIL# 2011 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=20.1 DEG. = 4.0 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

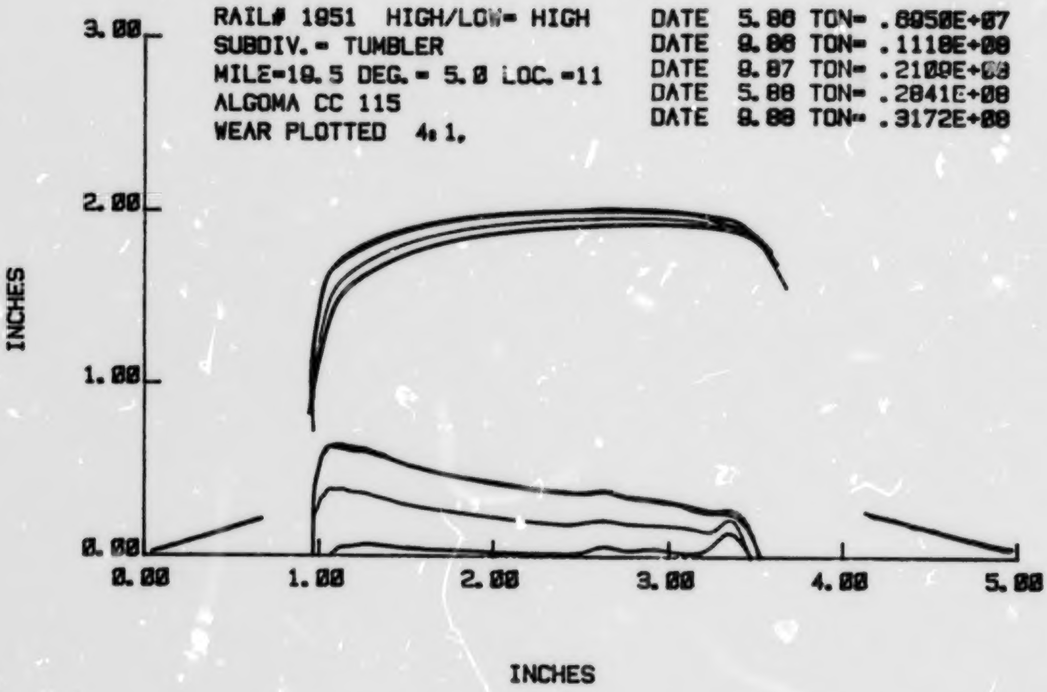

RAIL# 2012 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=20.1 DEG. = 4.0 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+0
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

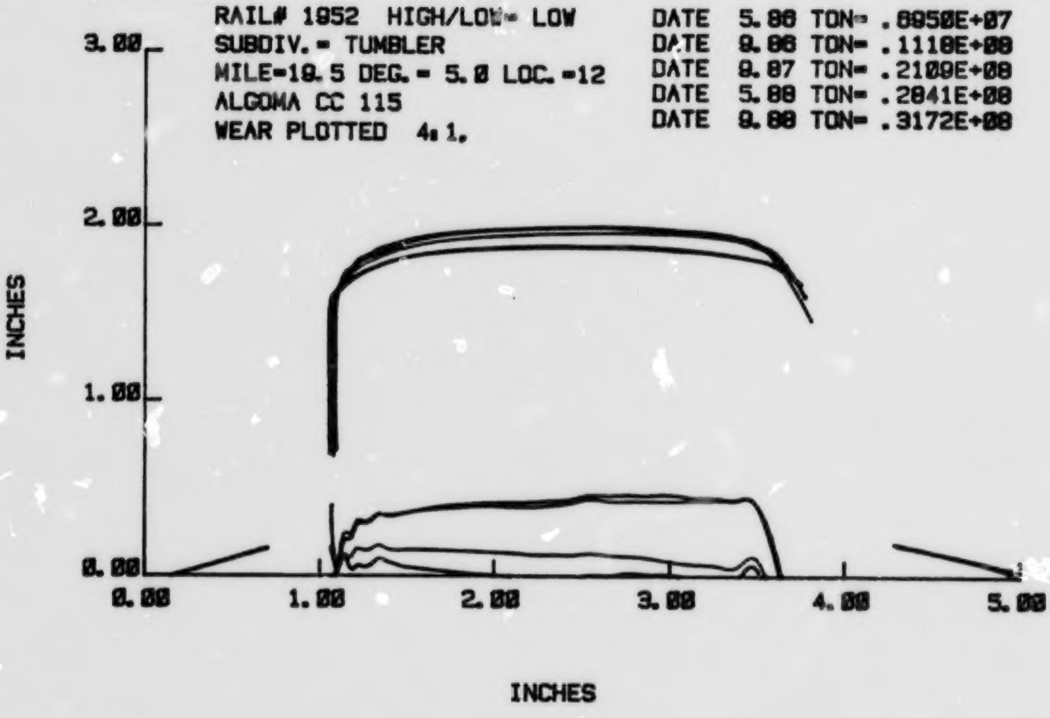

RAIL# 2013 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=20.1 DEG.= 4.0 LOC.=21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .8950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

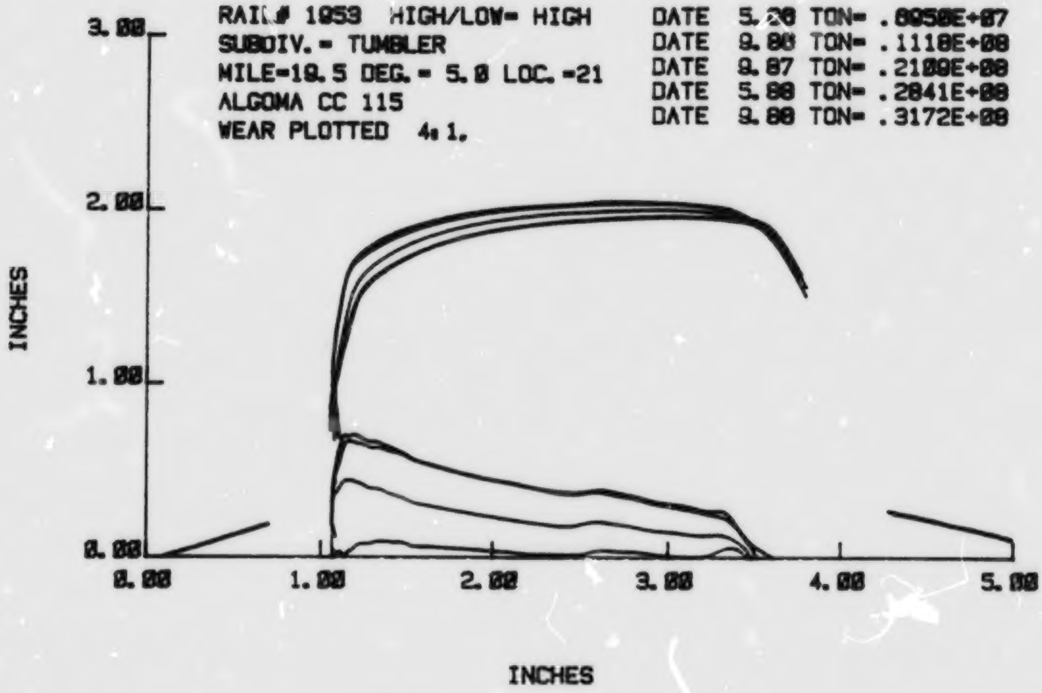

RAIL# 2014 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=20.1 DEG.= 4.0 LOC.=22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .8950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

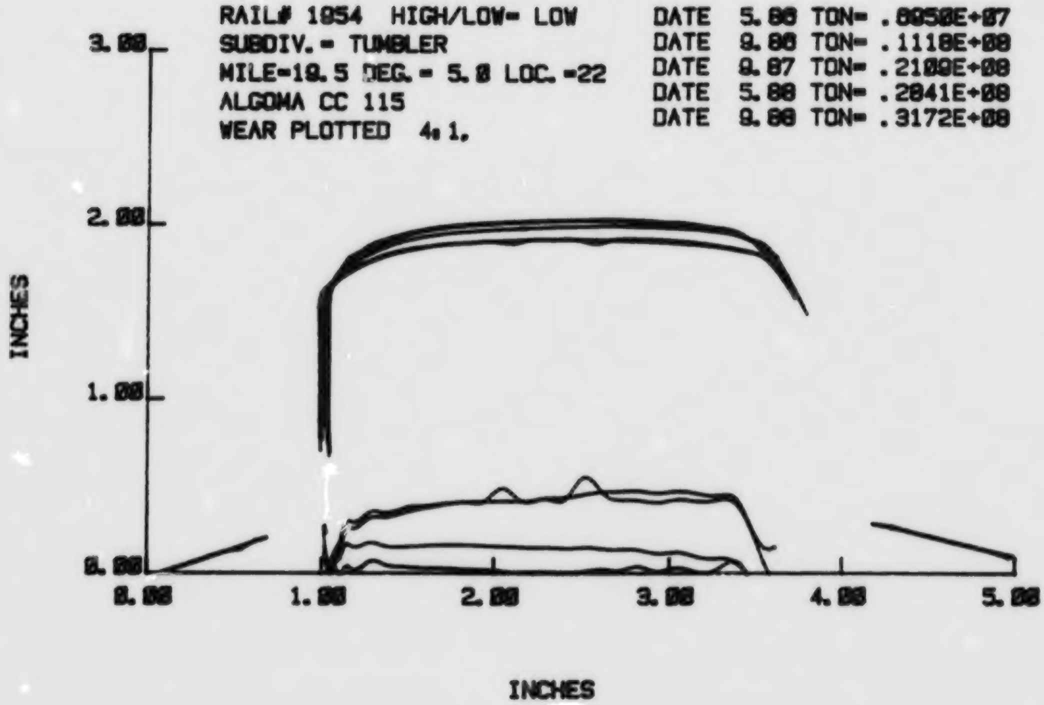

RAIL# 2015 HIGH/LOW= LOW
SUBDIV. = TUMPLER
MILE=29.1 DEG. = 4.0 LOC.=31
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .8950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

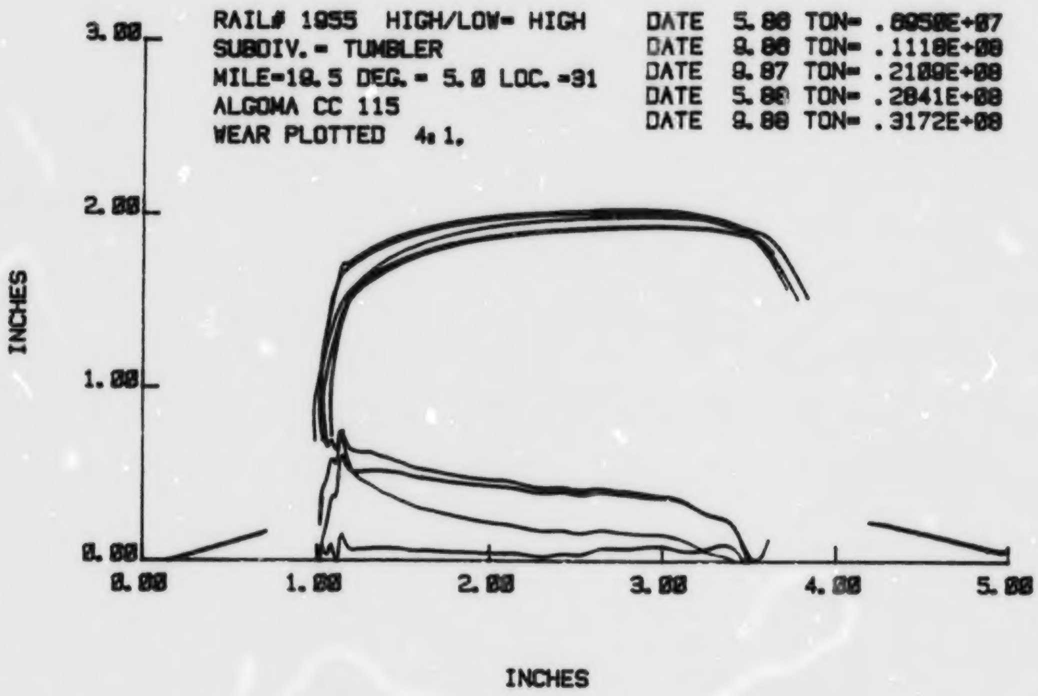

RAIL# 2016 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=29.1 DEG. = 4.0 LOC.=32
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .8950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2100E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

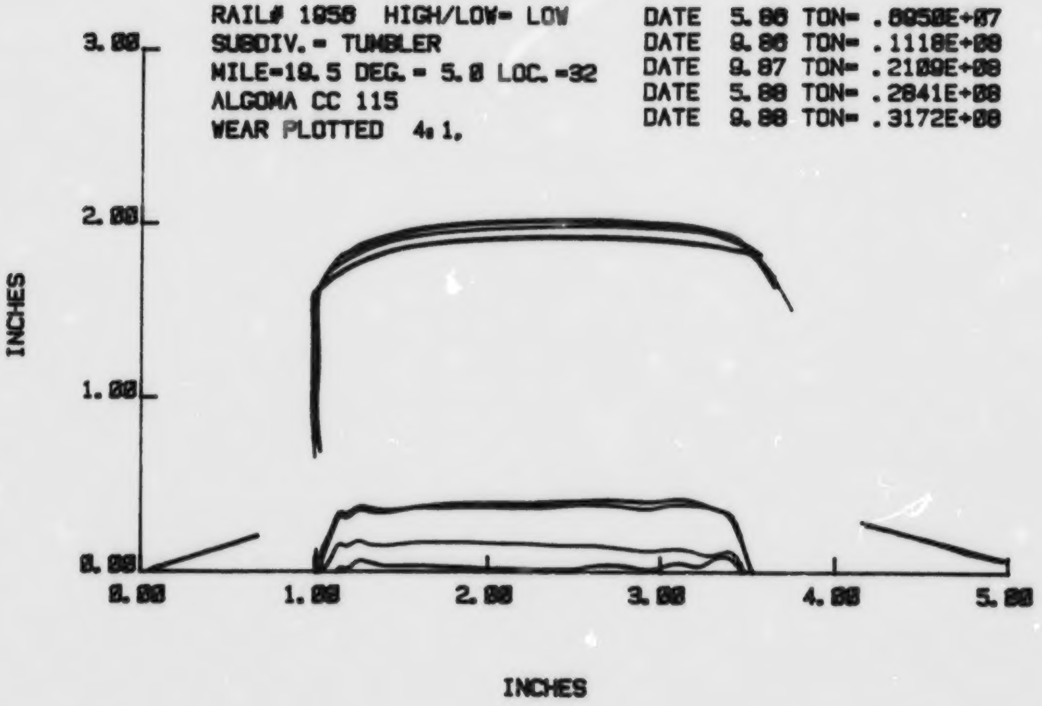

RAIL# 1951 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=19.5 DEG. = 5.0 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

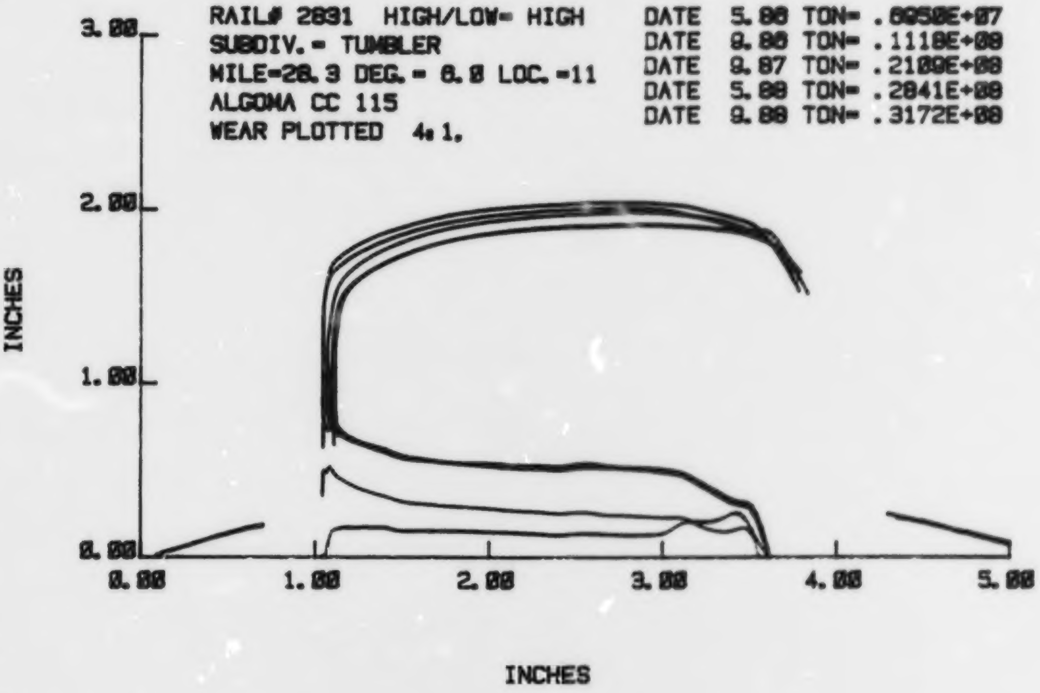

RAIL# 1952 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=19.5 DEG. = 5.0 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

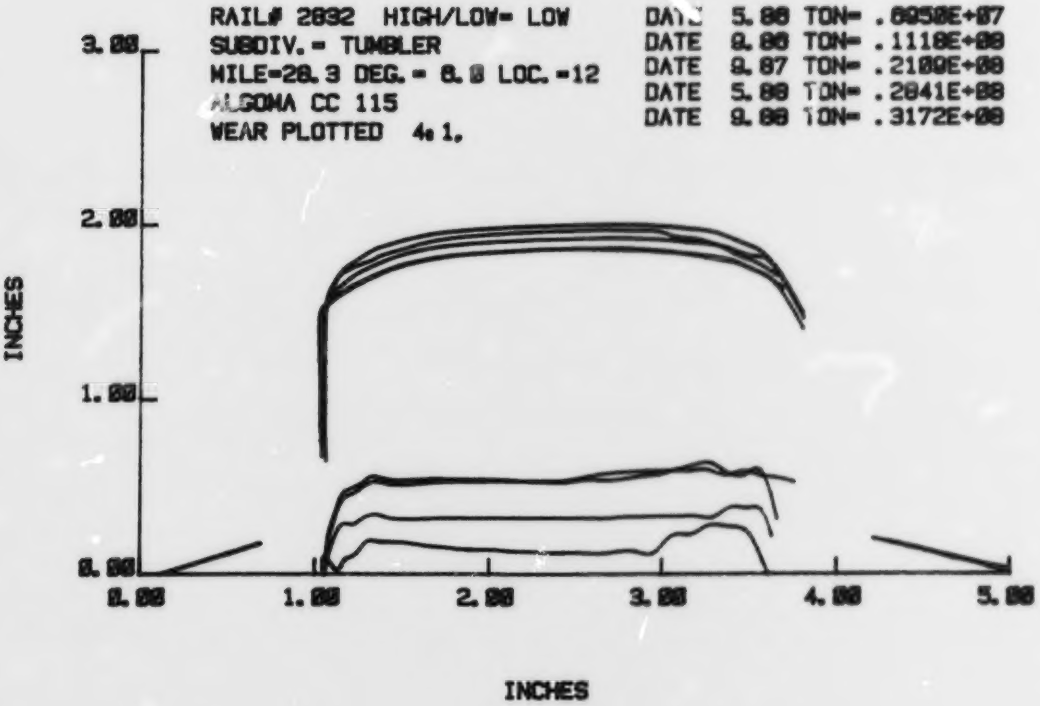

RAIL# 1053 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=10.5 DEG. = 5.0 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .8050E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

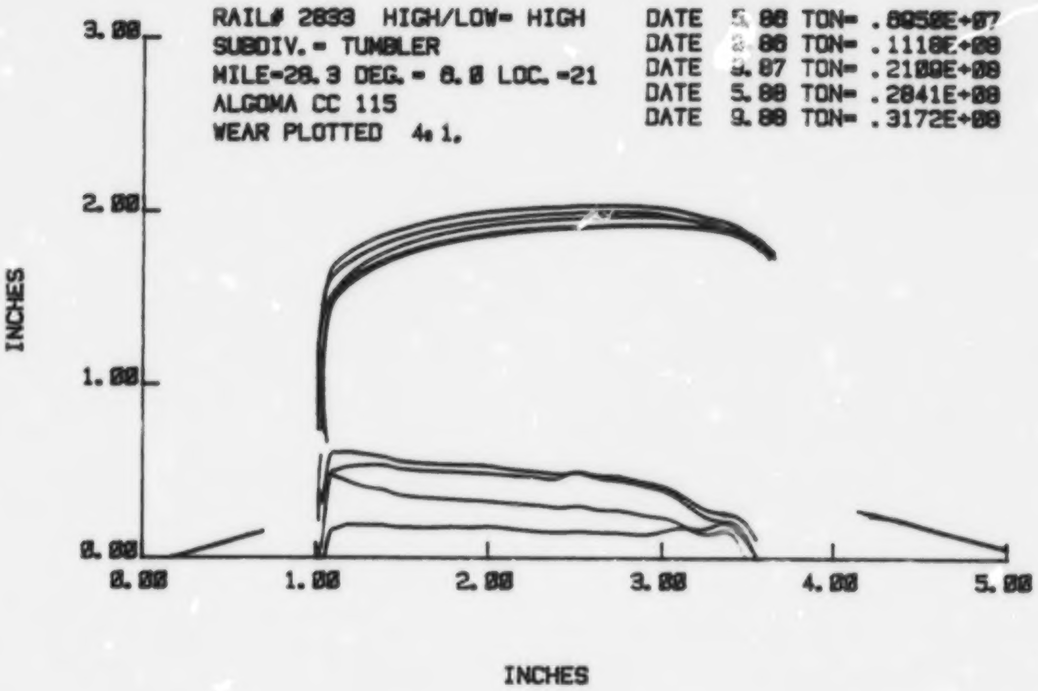

RAIL# 1054 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=10.5 DEG. = 5.0 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .8050E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

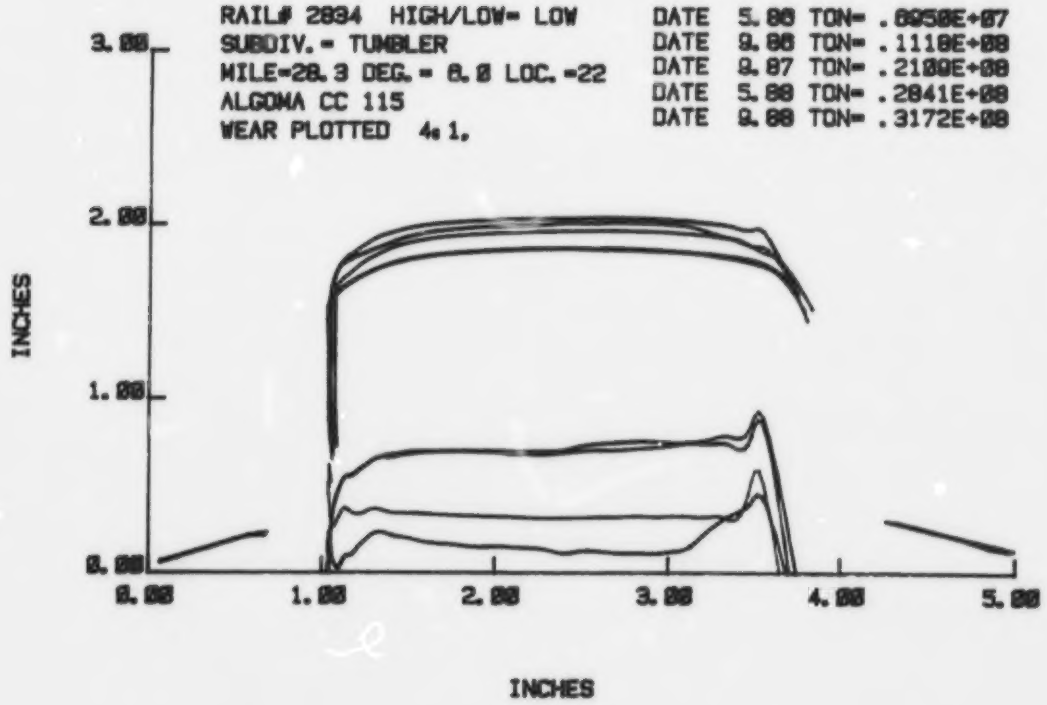

RAIL# 1955 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=10.5 DEG. = 5.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

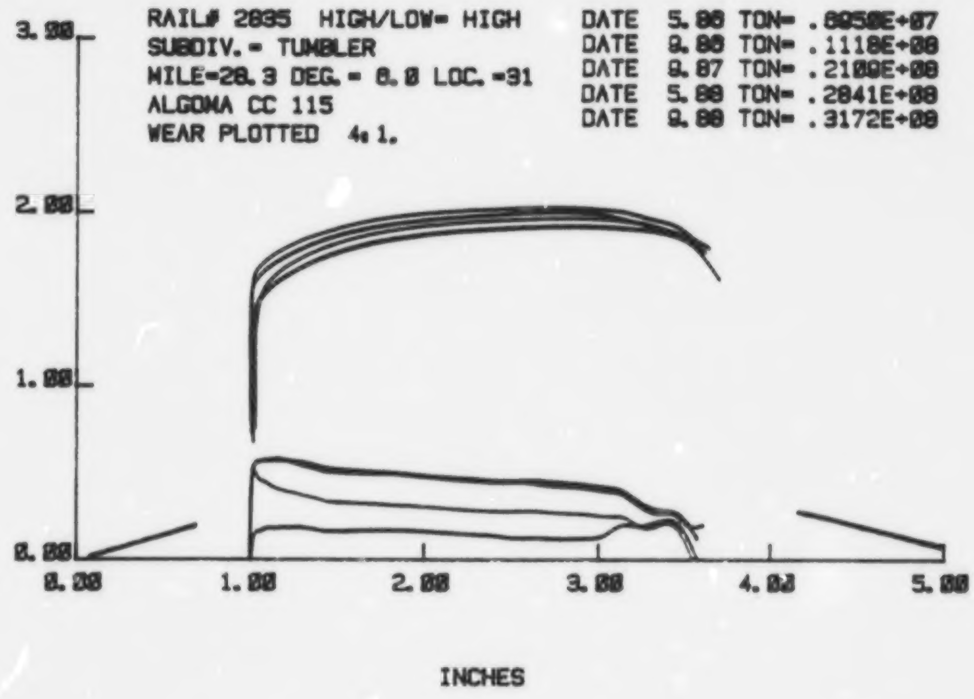

RAIL# 1956 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=10.5 DEG. = 5.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

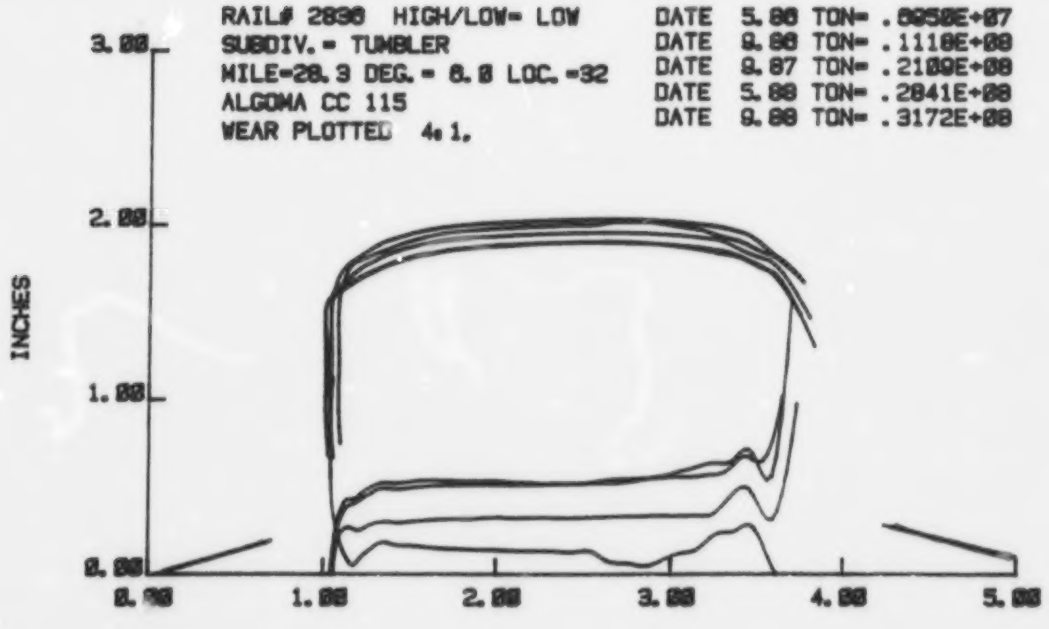

RAIL# 2831 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=28.3 DEG.= 6.0 LOC.=11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

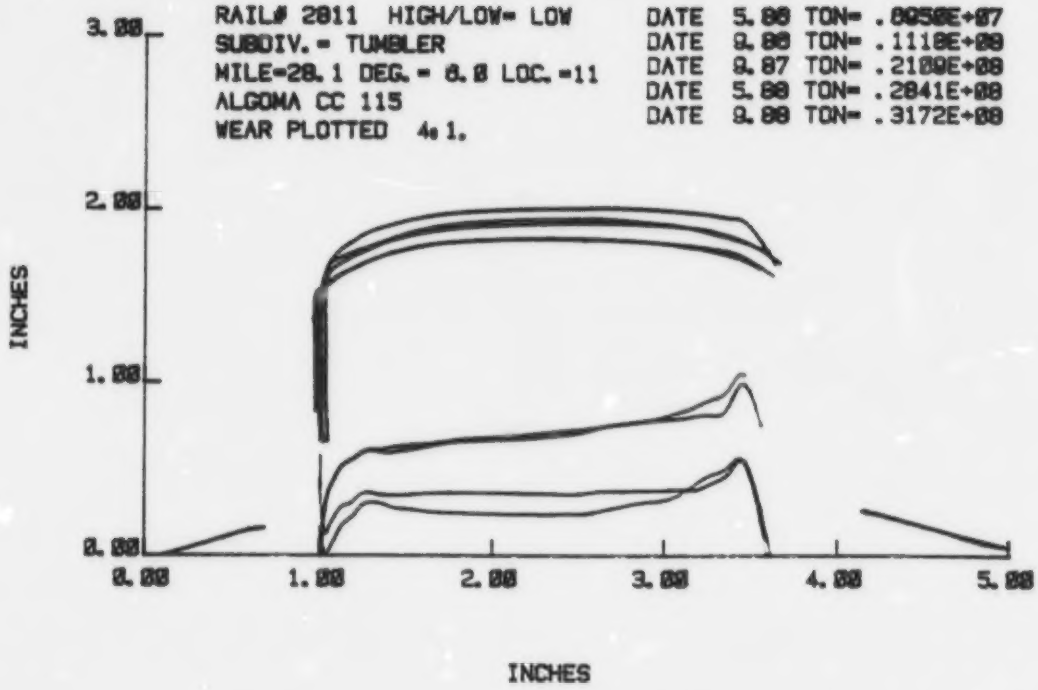

RAIL# 2832 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=28.3 DEG.= 6.0 LOC.=12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

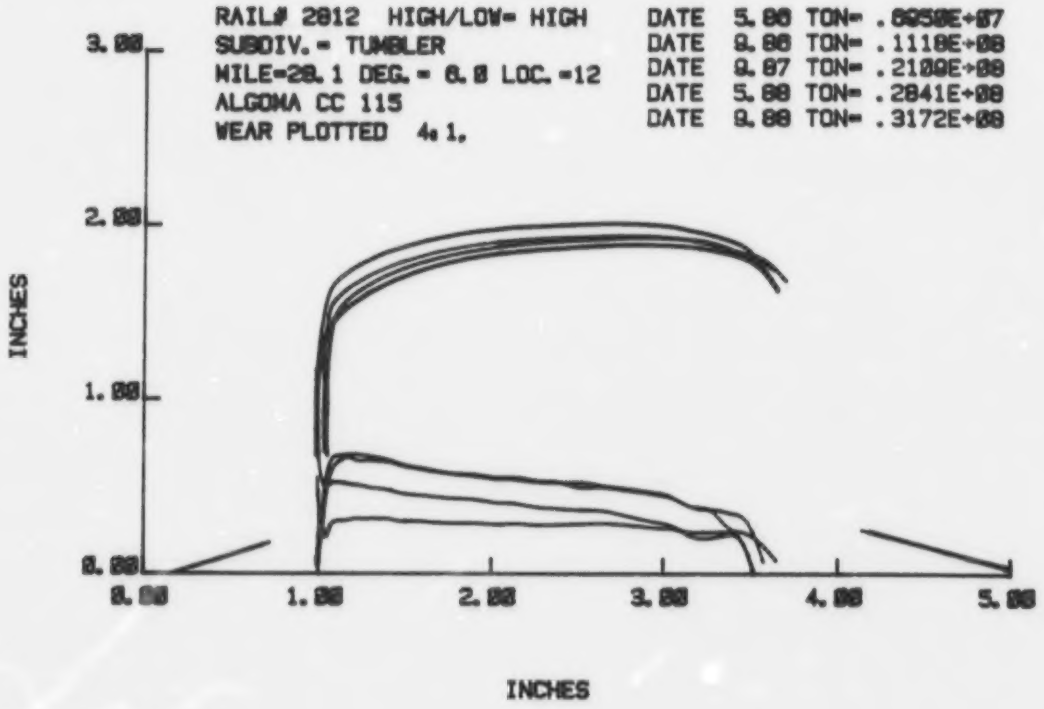

RAIL# 2833 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=28.3 DEG.= 8.0 LOC.=21
ALGOMA CC 115
WEAR PLOTTED 4. 1.
DATE 5.86 TON= .6950E+07
DATE 8.86 TON= .1118E+08
DATE 8.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

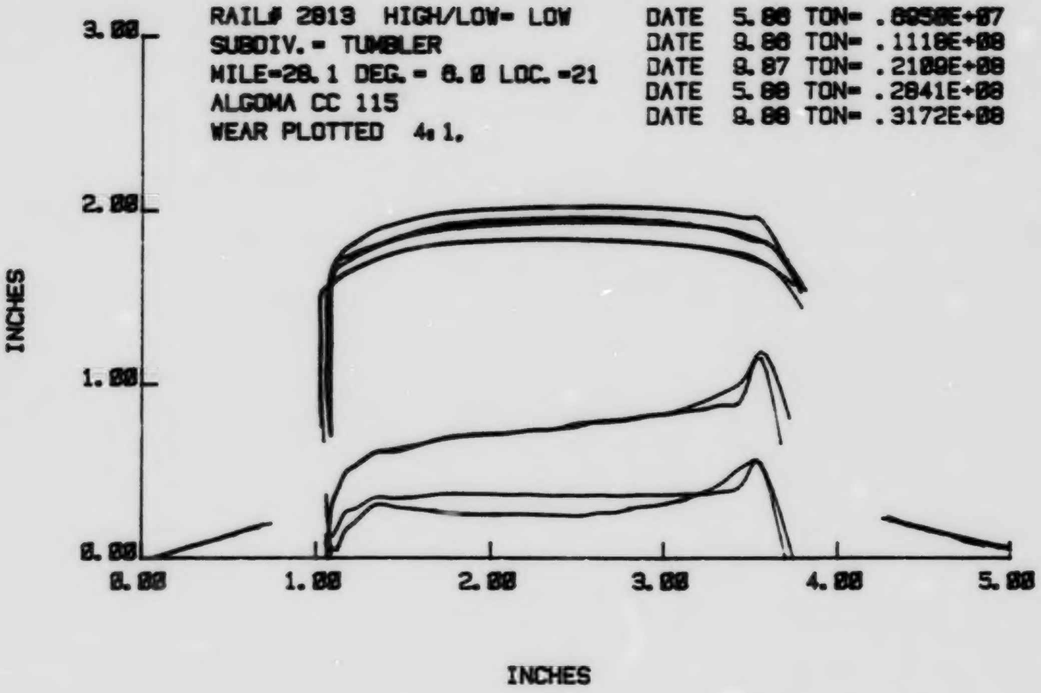

RAIL# 2834 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=28.3 DEG.= 8.0 LOC.=22
ALGOMA CC 115
WEAR PLOTTED 4. 1.
DATE 5.86 TON= .6950E+07
DATE 8.86 TON= .1118E+08
DATE 8.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 8.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

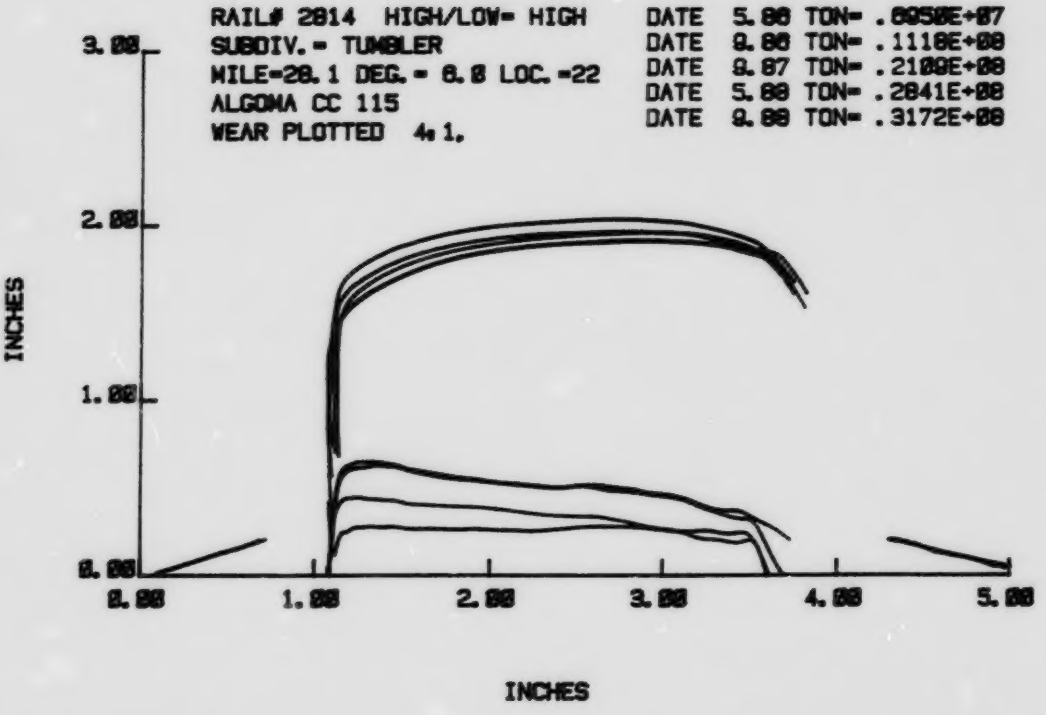

RAIL# 2835 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=28.3 DEG. = 8.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .8050E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

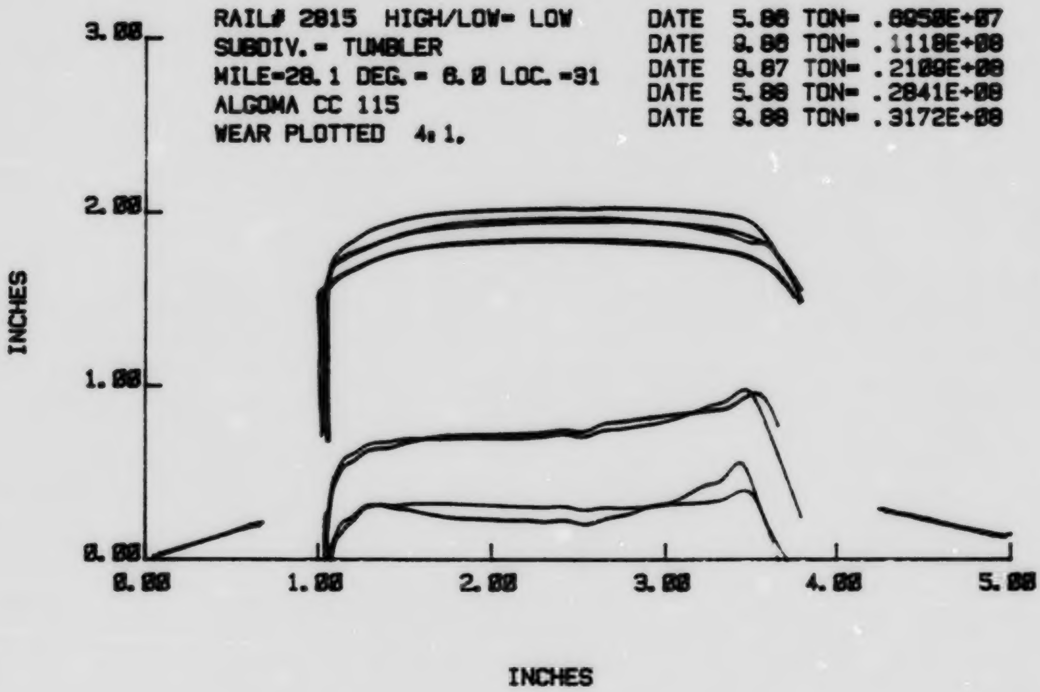

RAIL# 2836 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=28.3 DEG. = 8.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .8050E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

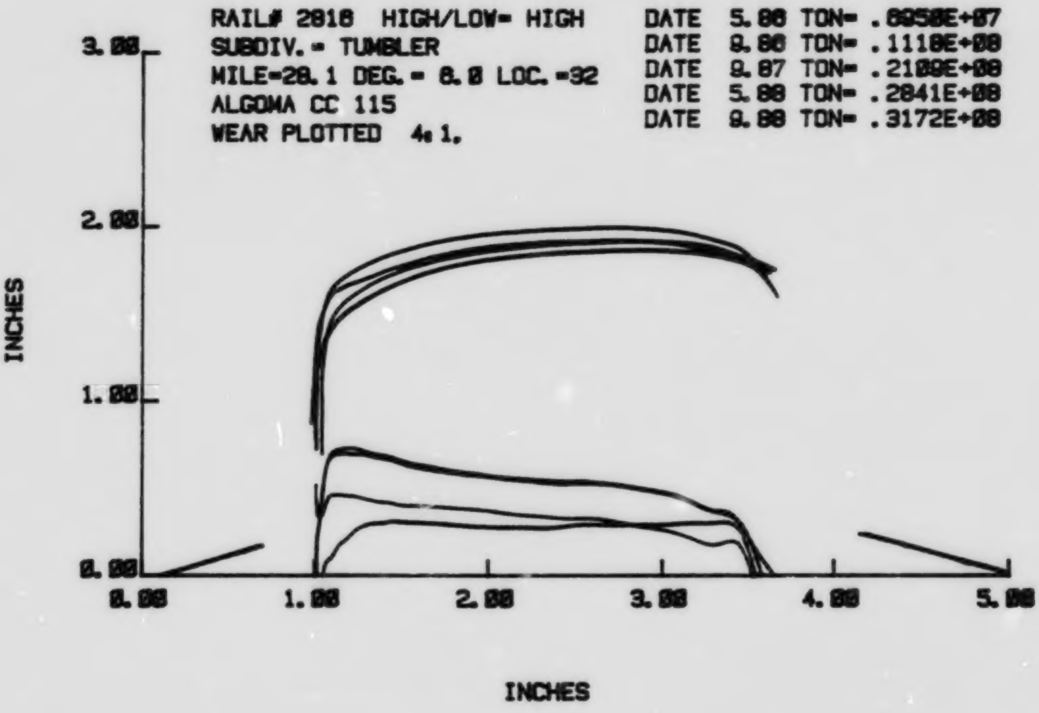

RAIL# 2011 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=20.1 DEG. = 6.0 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .8050E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

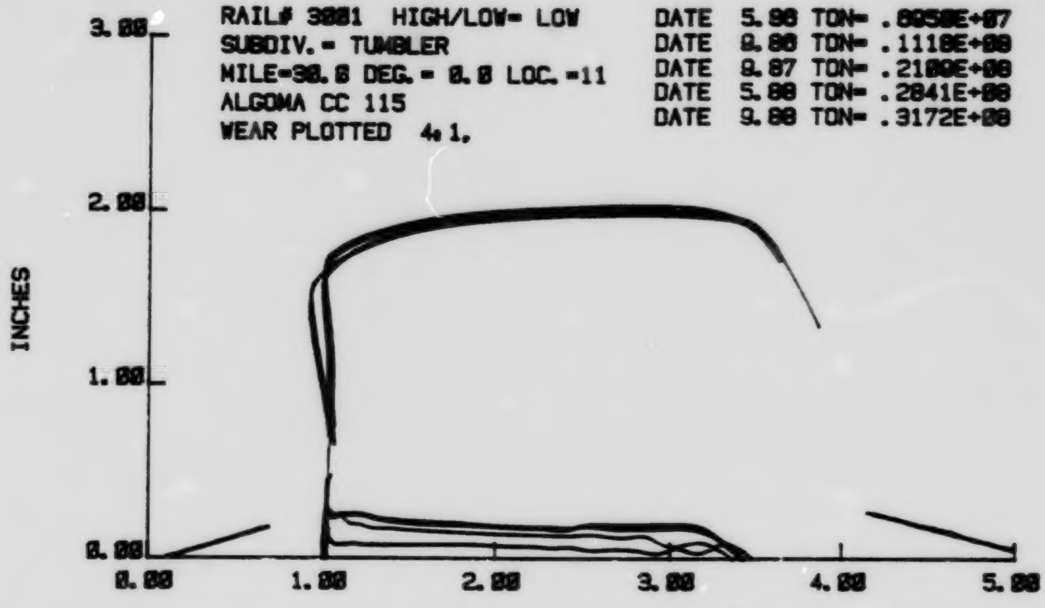

RAIL# 2012 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=20.1 DEG. = 6.0 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .8050E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

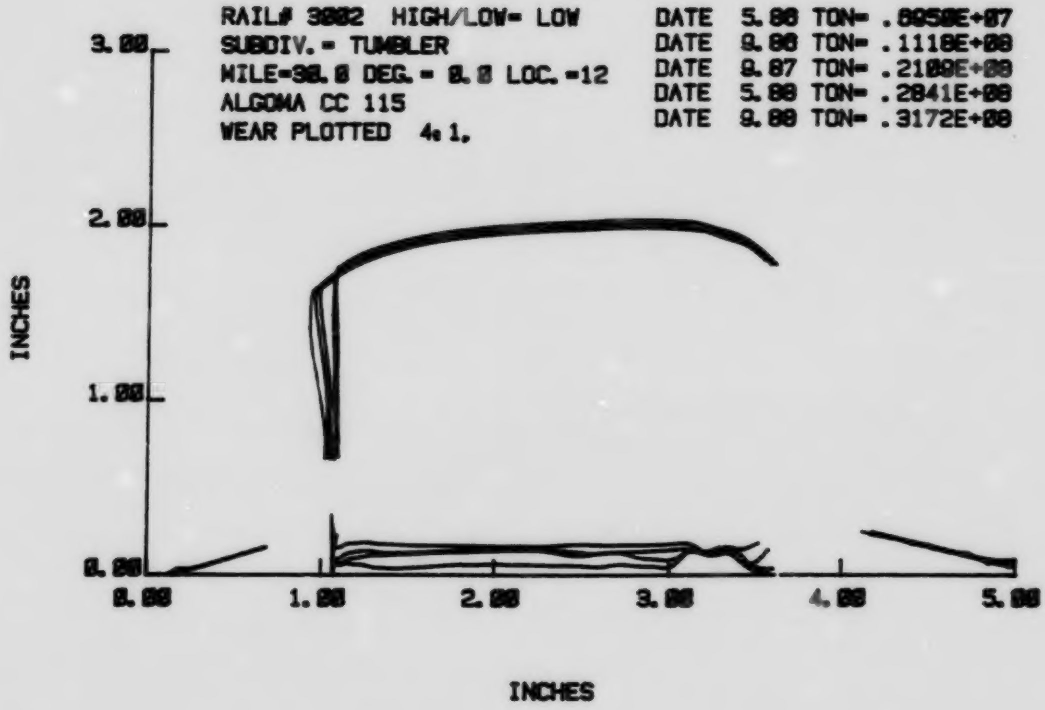

RAIL# 2013 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=28.1 DEG. = 8.0 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

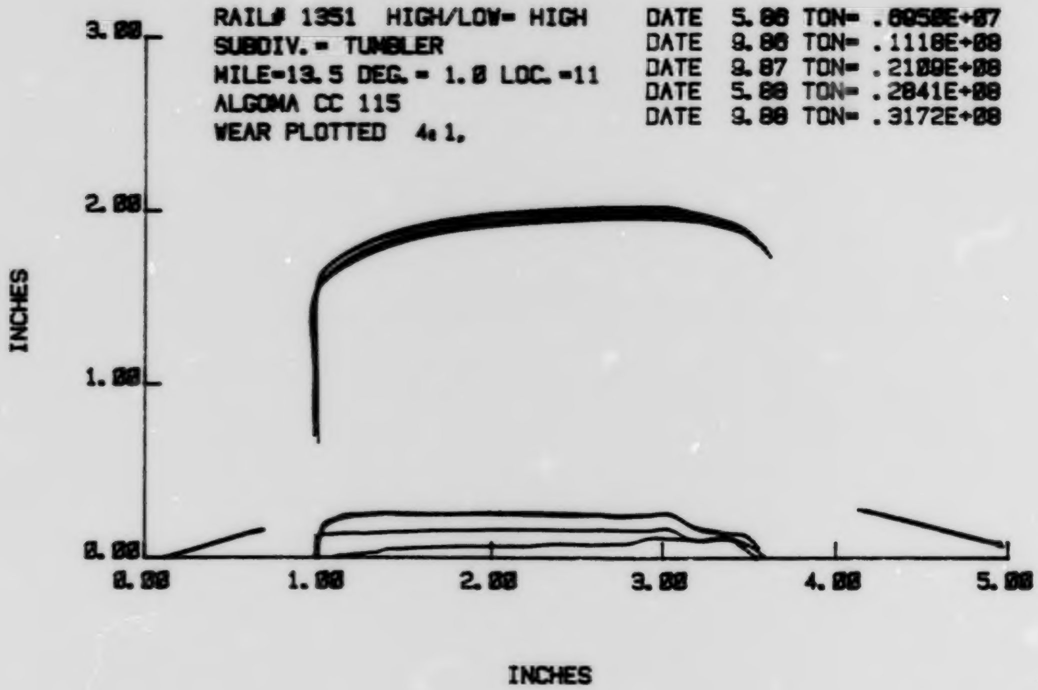

RAIL# 2014 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=28.1 DEG. = 8.0 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

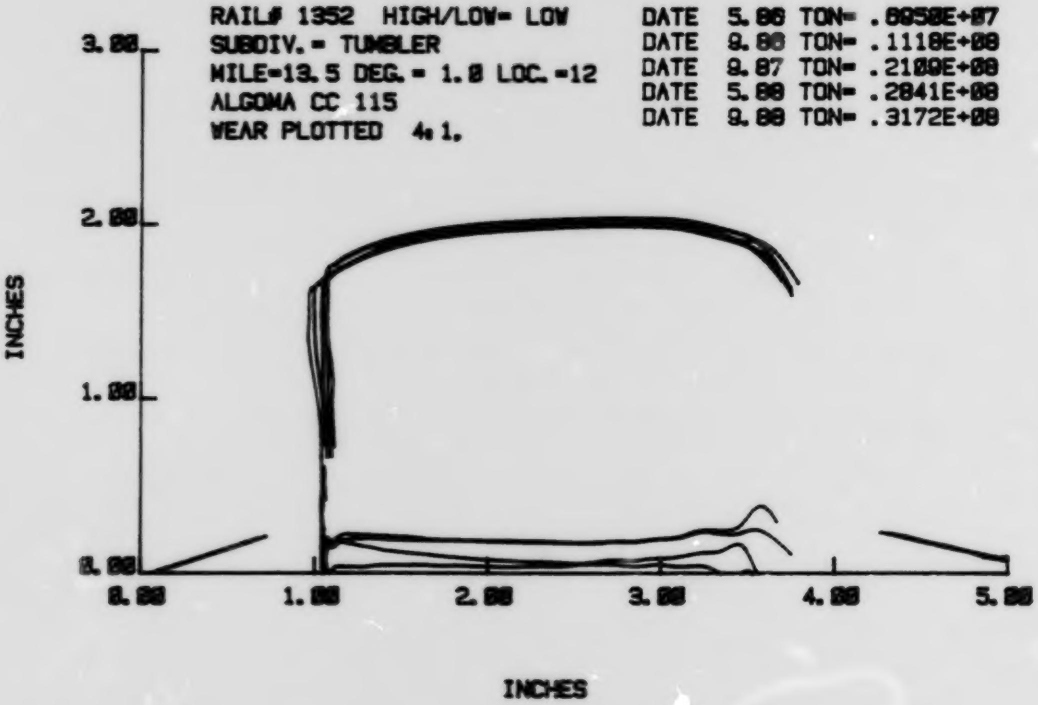

RAIL# 2815 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=28.1 DEG. = 6.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

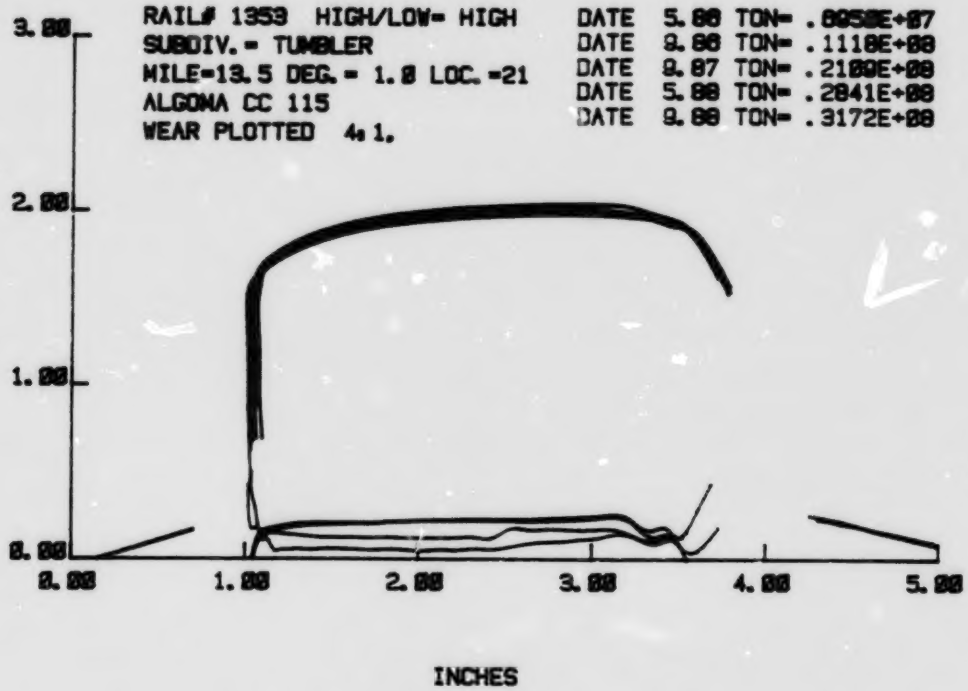

RAIL# 2816 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=28.1 DEG. = 6.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

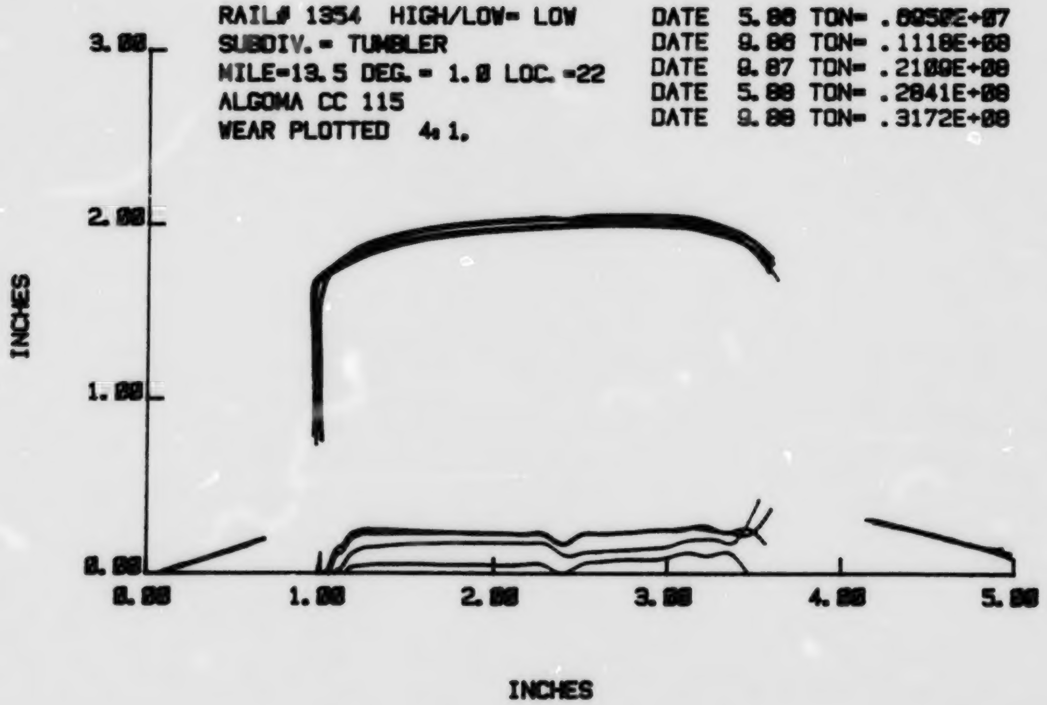

RAIL# 3001 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=30.0 DEG.= 0.0 LOC.=11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 8.86 TON= .1110E+08
DATE 8.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

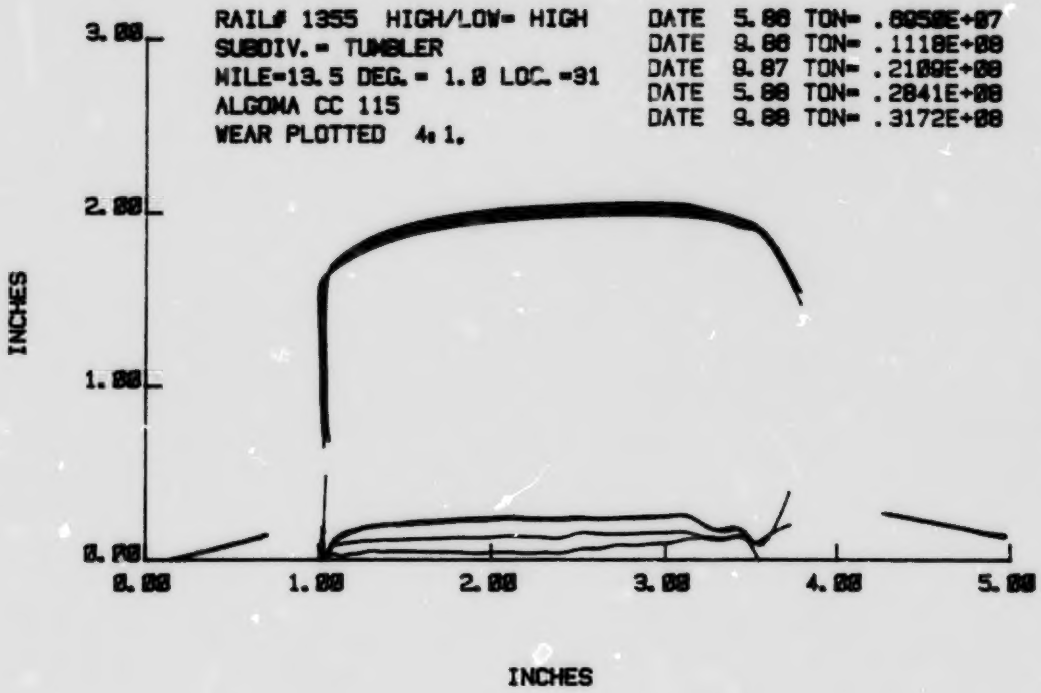

RAIL# 3002 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=30.0 DEG.= 0.0 LOC.=12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 8.86 TON= .1110E+08
DATE 8.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

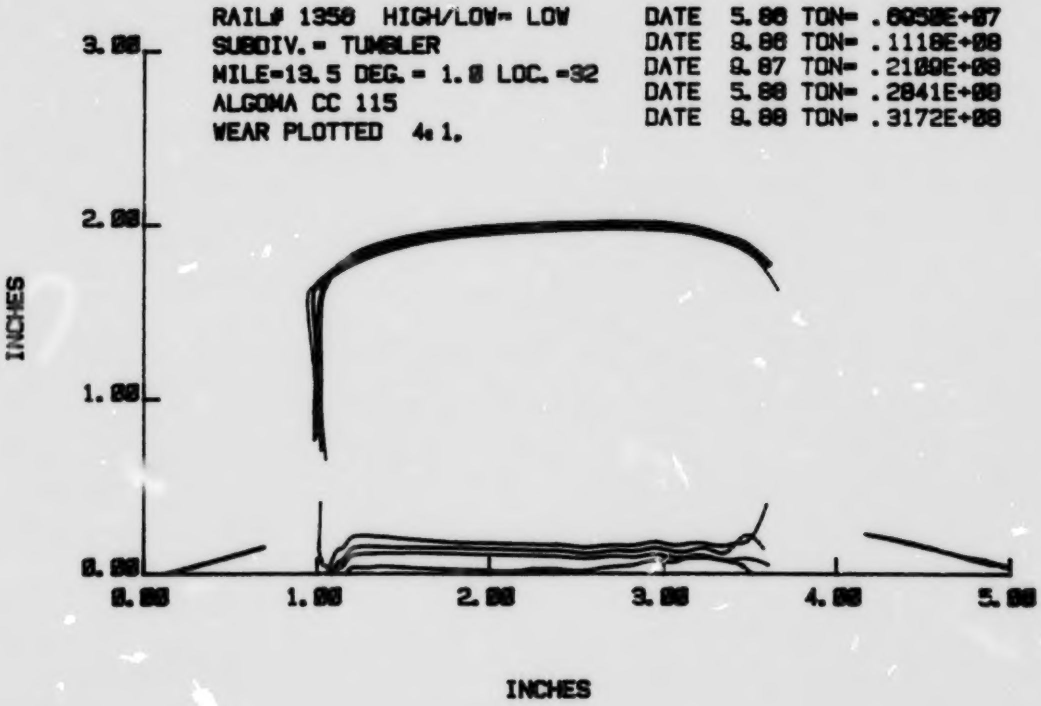

RAIL# 1351 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=13.5 DEG. = 1.0 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .8050E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

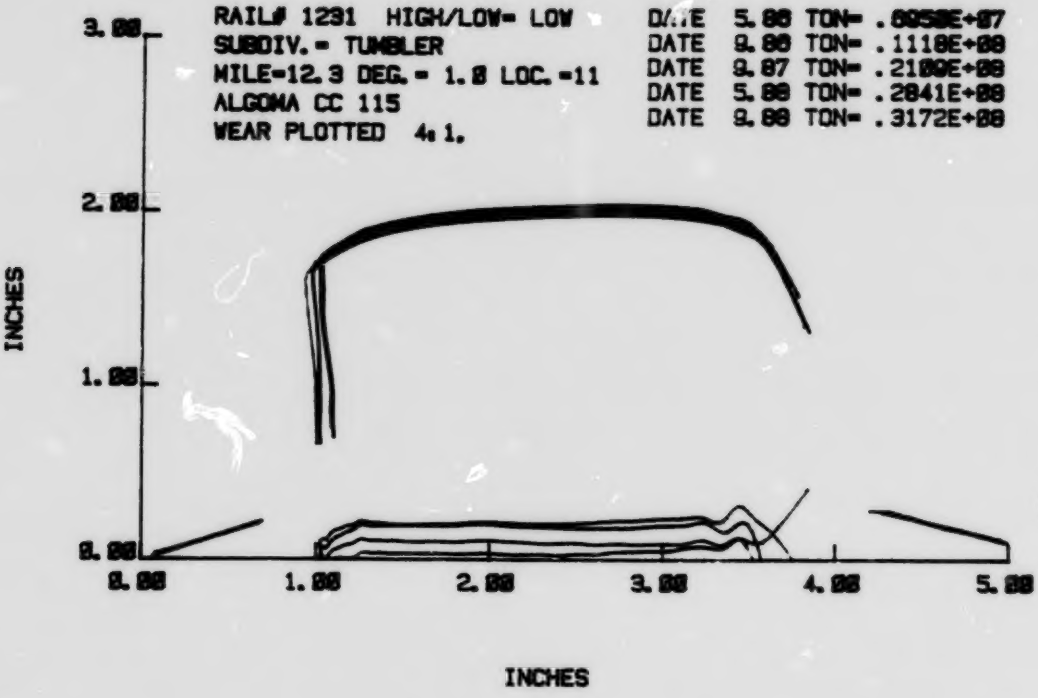

RAIL# 1352 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=13.5 DEG. = 1.0 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .8050E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

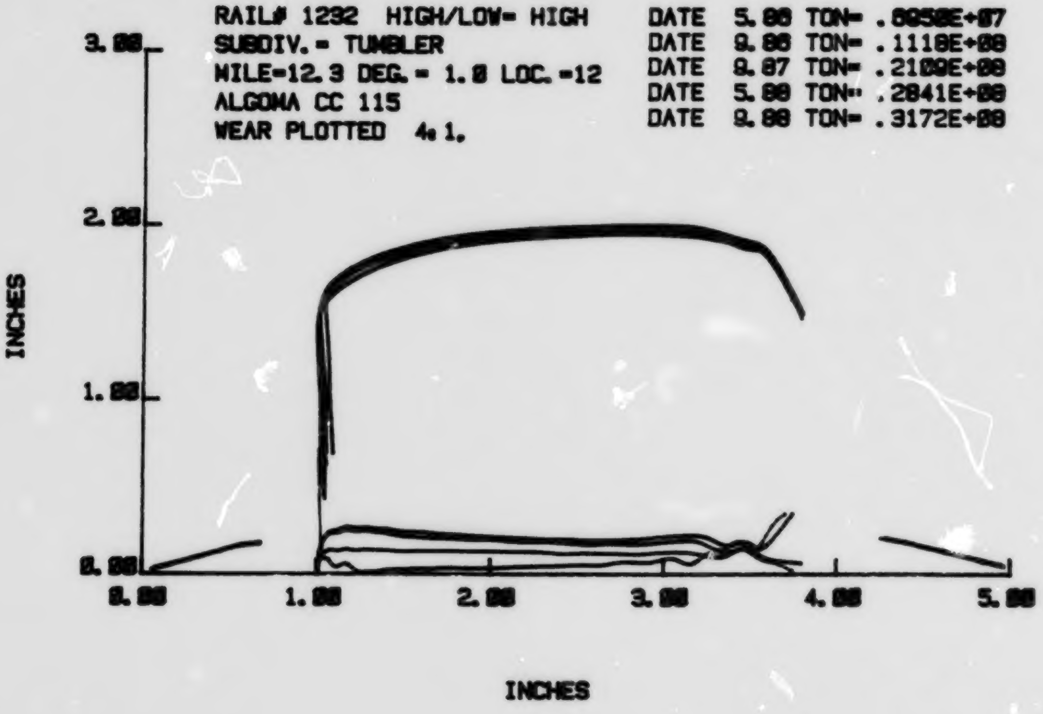

RAIL# 1353 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=13.5 DEG. = 1.0 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.80 TON= .0950E+07
DATE 9.80 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.80 TON= .2041E+08
DATE 9.80 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

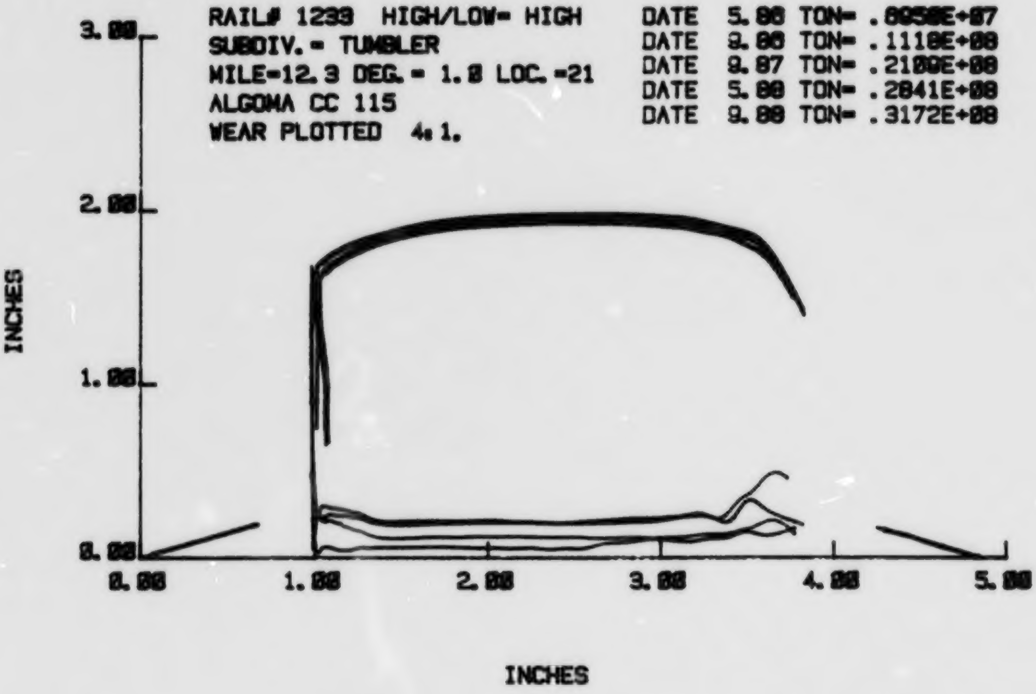

RAIL# 1354 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=13.5 DEG. = 1.0 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.80 TON= .0950E+07
DATE 9.80 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.80 TON= .2041E+08
DATE 9.80 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

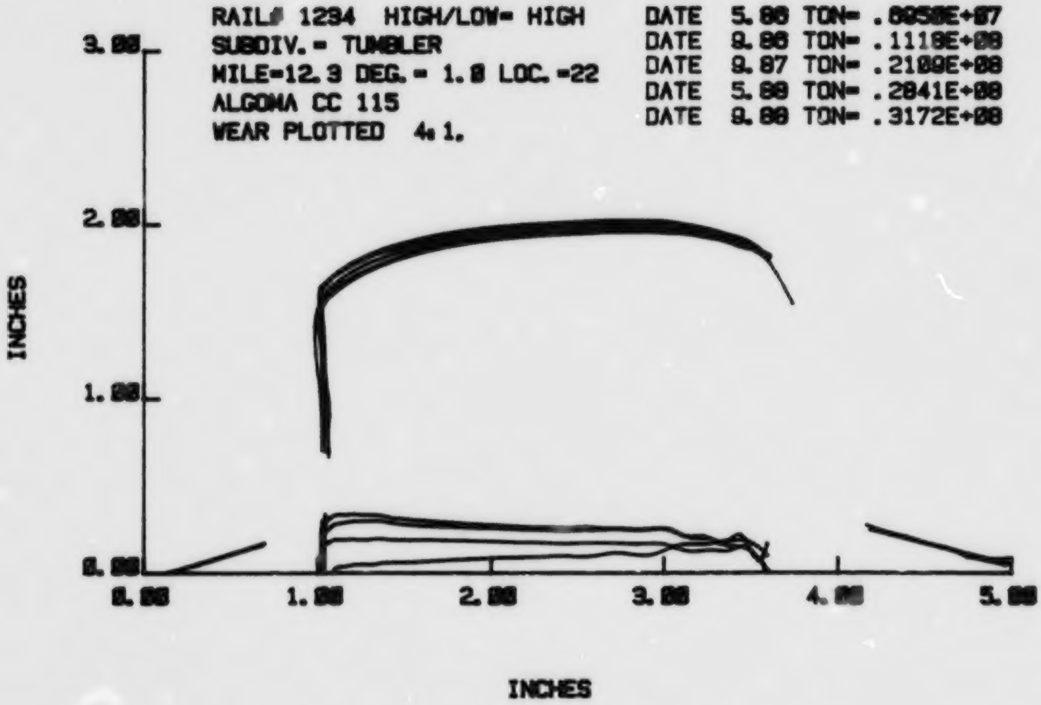

RAIL# 1355 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=13.5 DEG. = 1.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6050E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

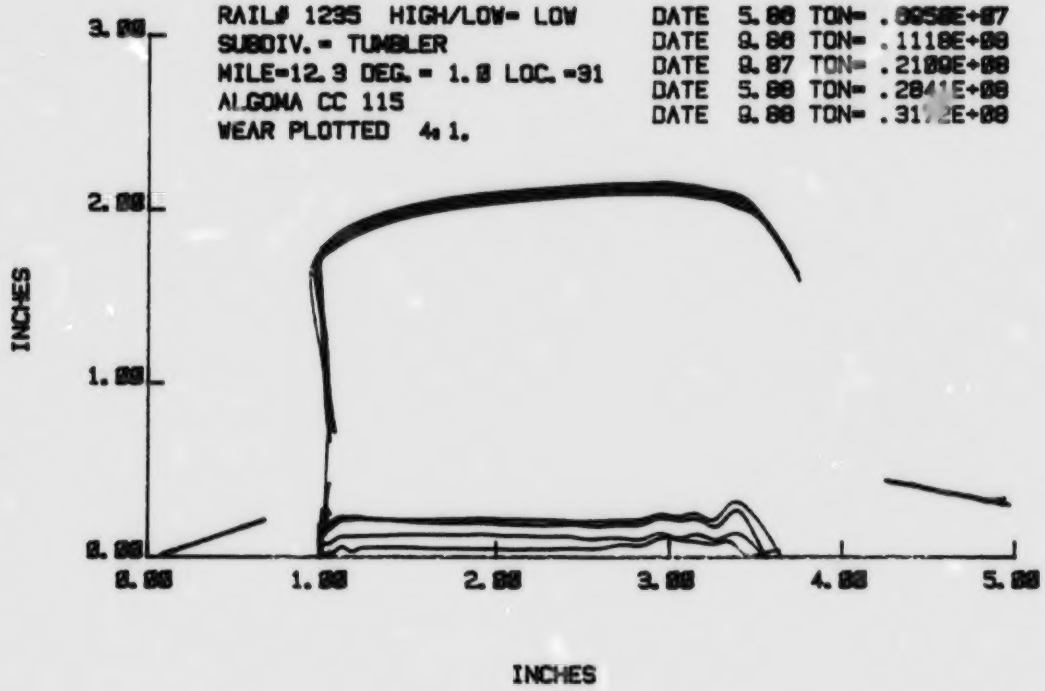

RAIL# 1356 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=13.5 DEG. = 1.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6050E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

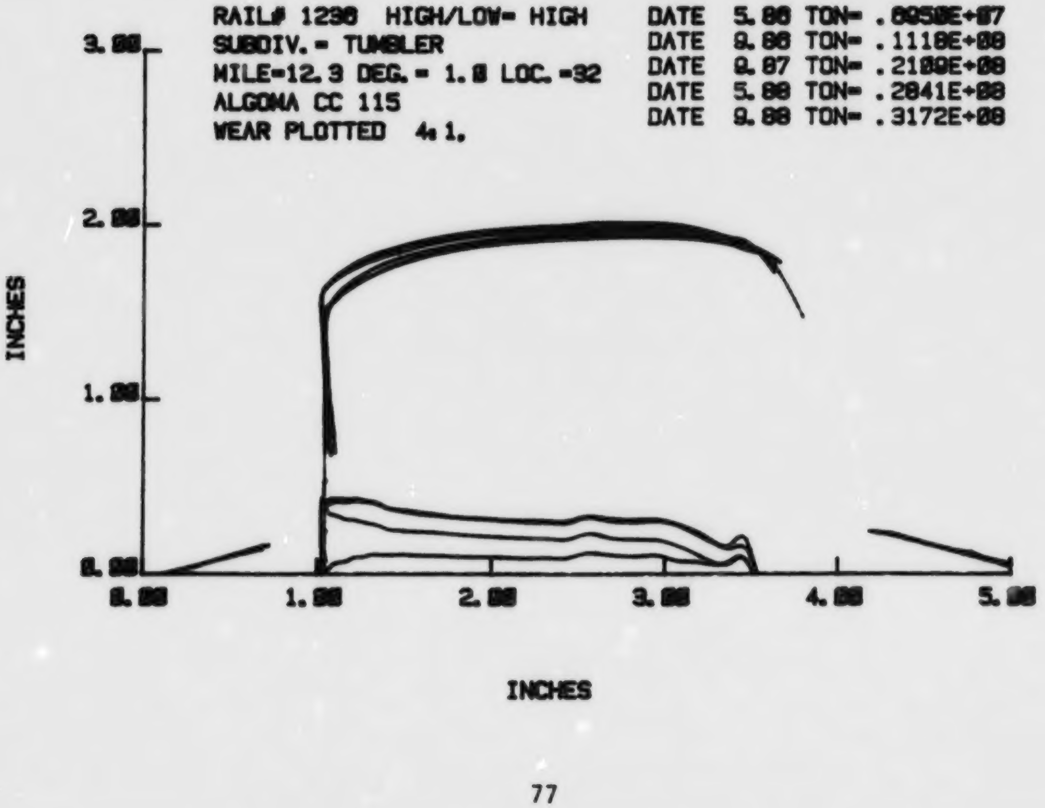

RAIL# 1231 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=12.3 DEG. = 1.0 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.88 TON= .8050E+07
DATE 9.88 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

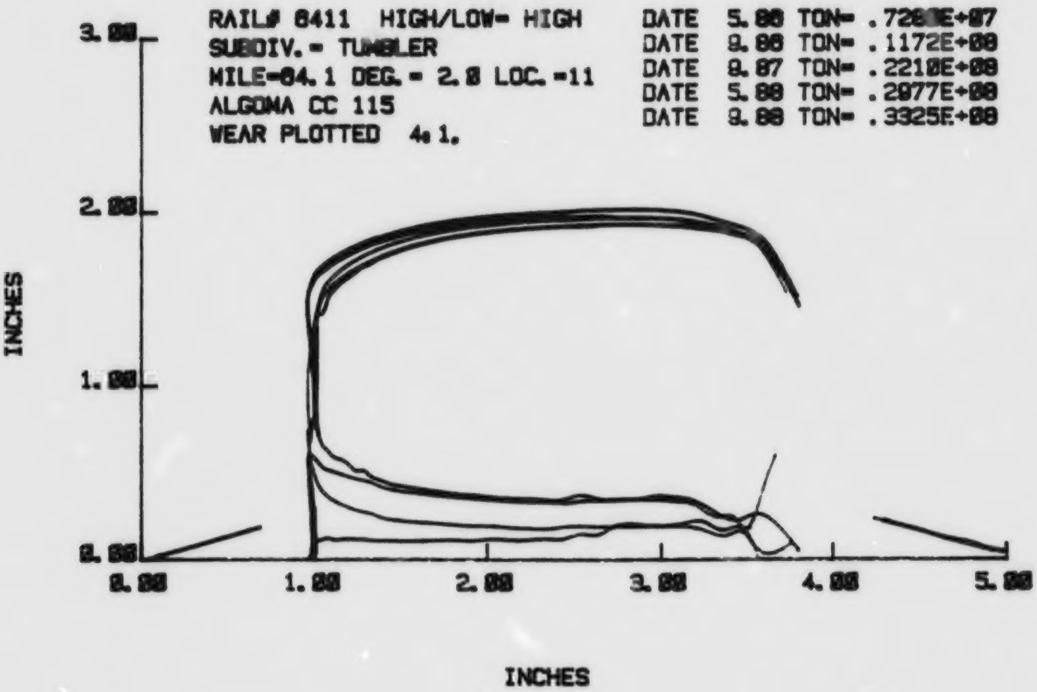

RAIL# 1232 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=12.3 DEG. = 1.0 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.88 TON= .8050E+07
DATE 9.88 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

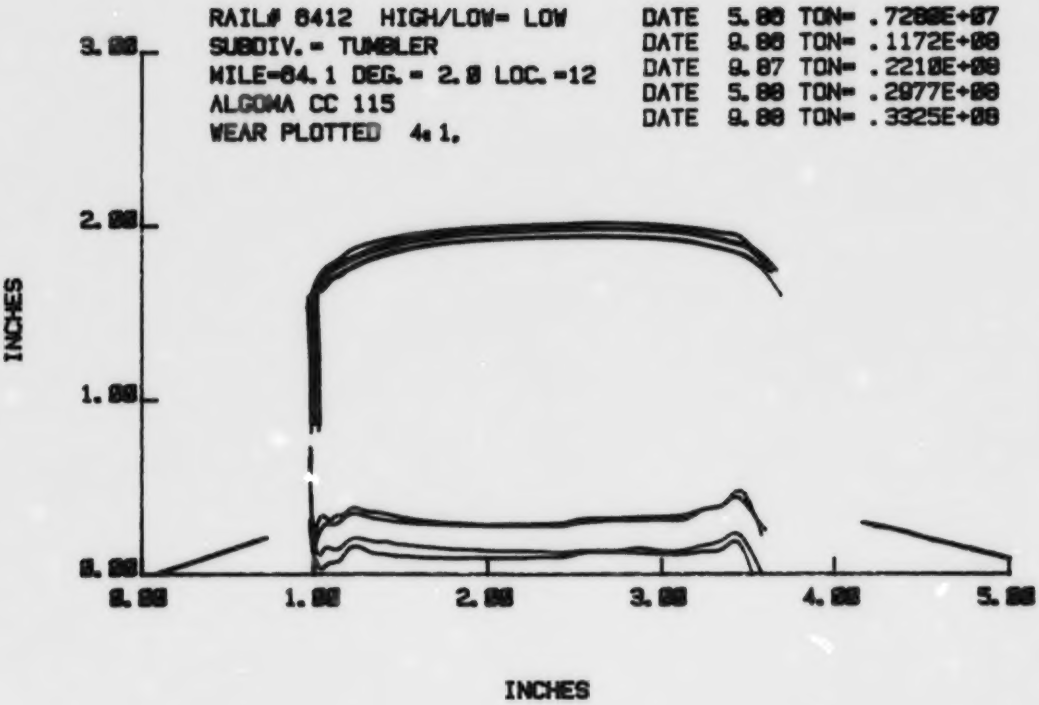

RAIL# 1233 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=12.3 DEG. = 1.0 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6050E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

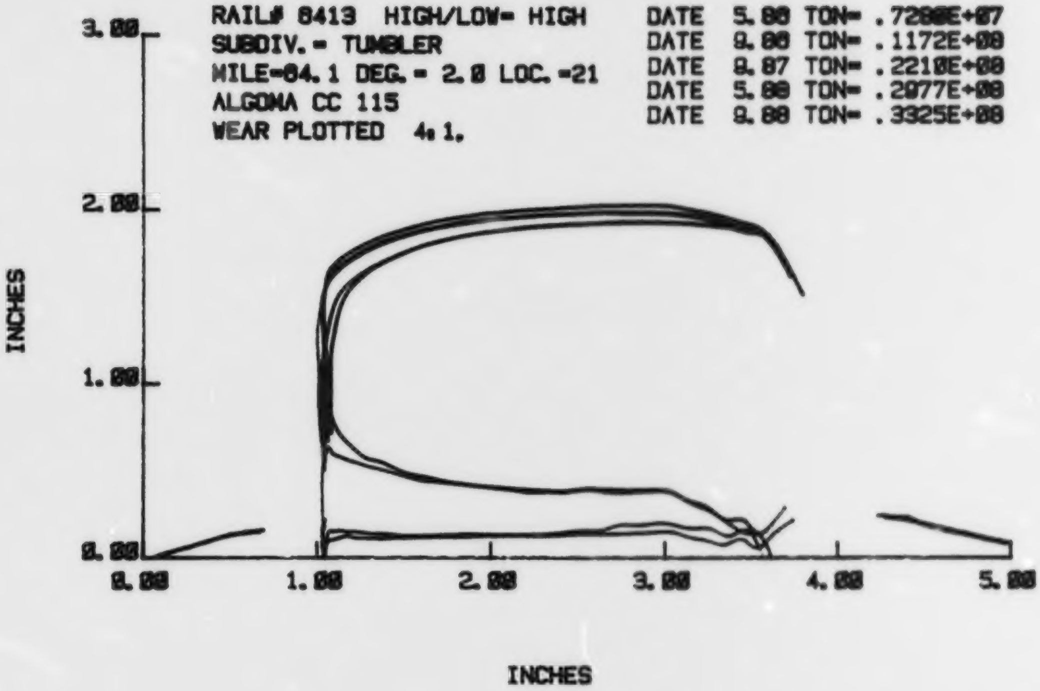

RAIL# 1234 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=12.3 DEG. = 1.0 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6050E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

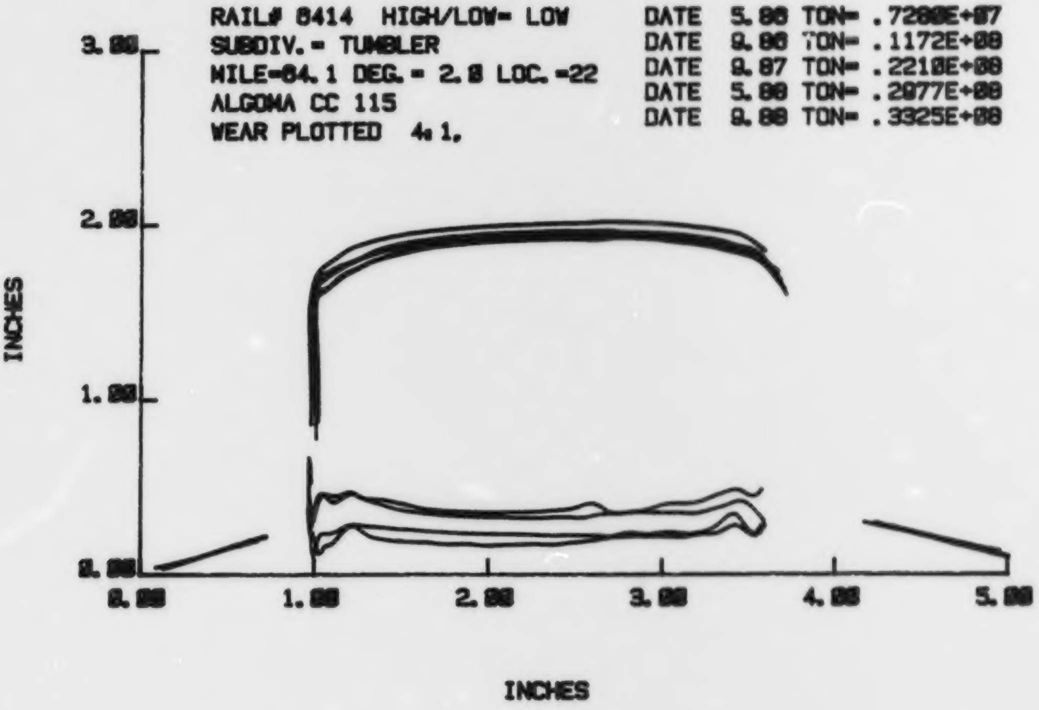

RAIL# 1235 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=12.3 DEG. = 1.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .8950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

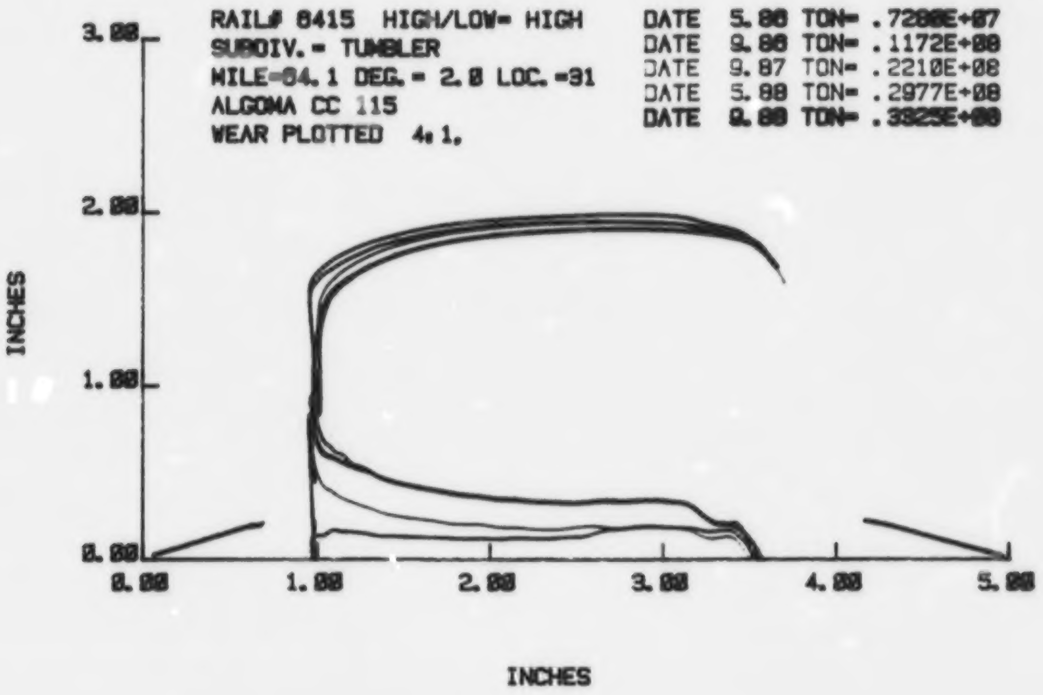

RAIL# 1236 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=12.3 DEG. = 1.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .8950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2100E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

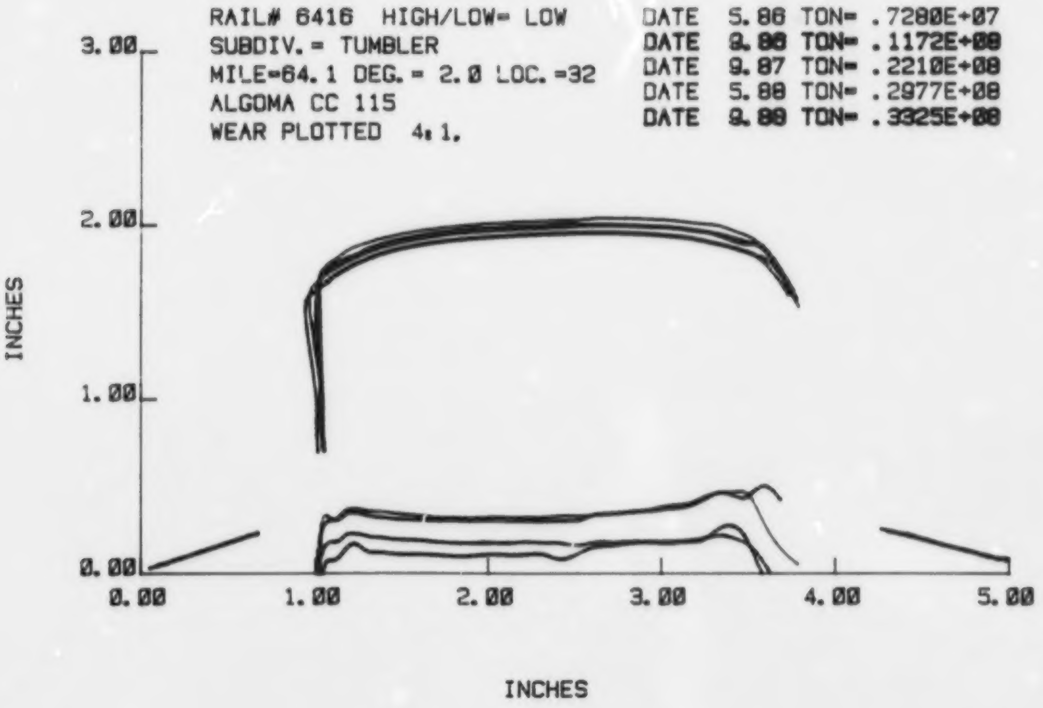

RAIL# 8411 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=84.1 DEG.= 2.0 LOC.=11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

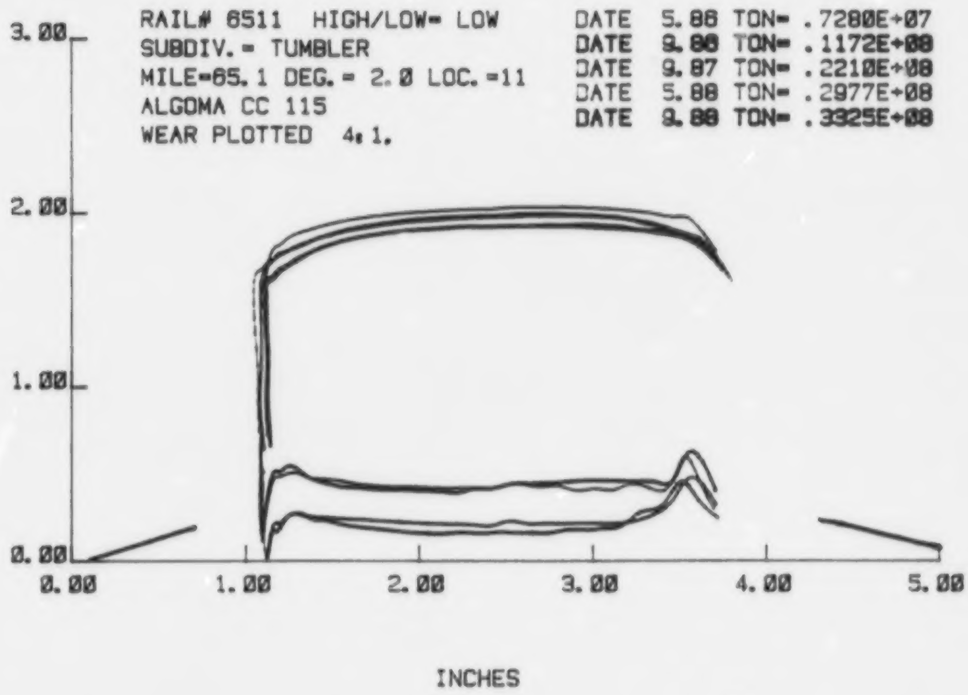

RAIL# 8412 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=84.1 DEG.= 2.0 LOC.=12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

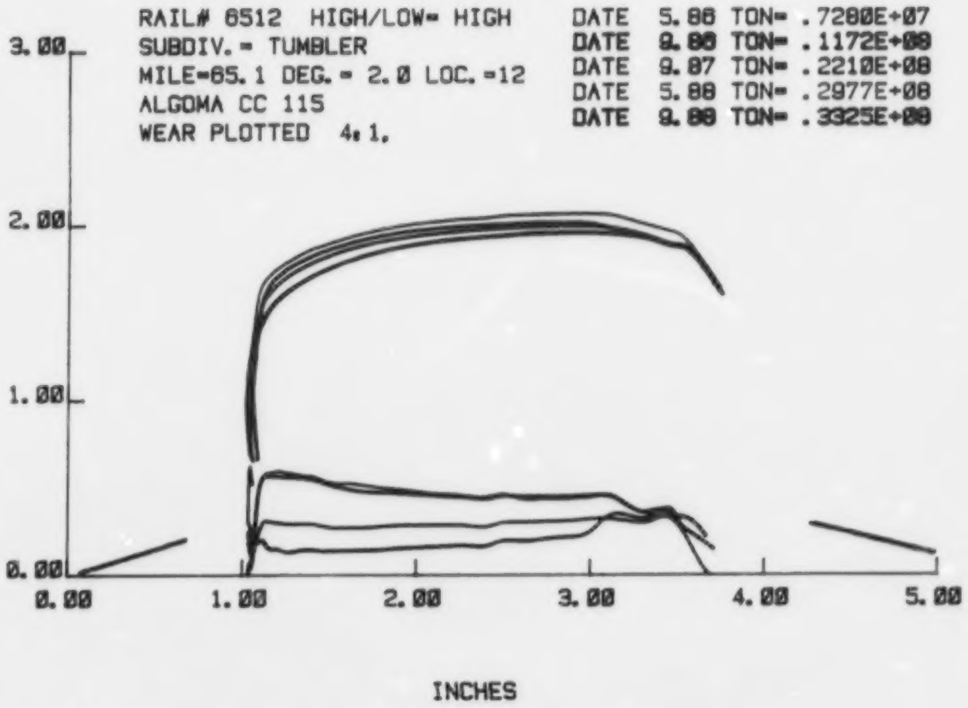

RAIL# 8413 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=84.1 DEG. = 2.0 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

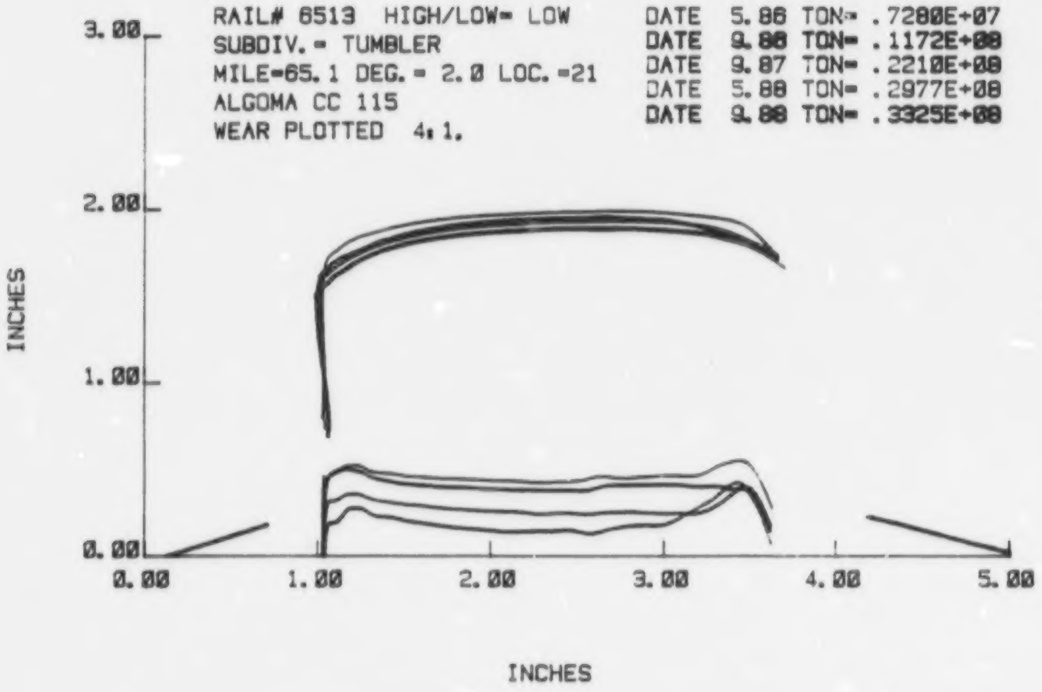

RAIL# 8414 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=84.1 DEG. = 2.0 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

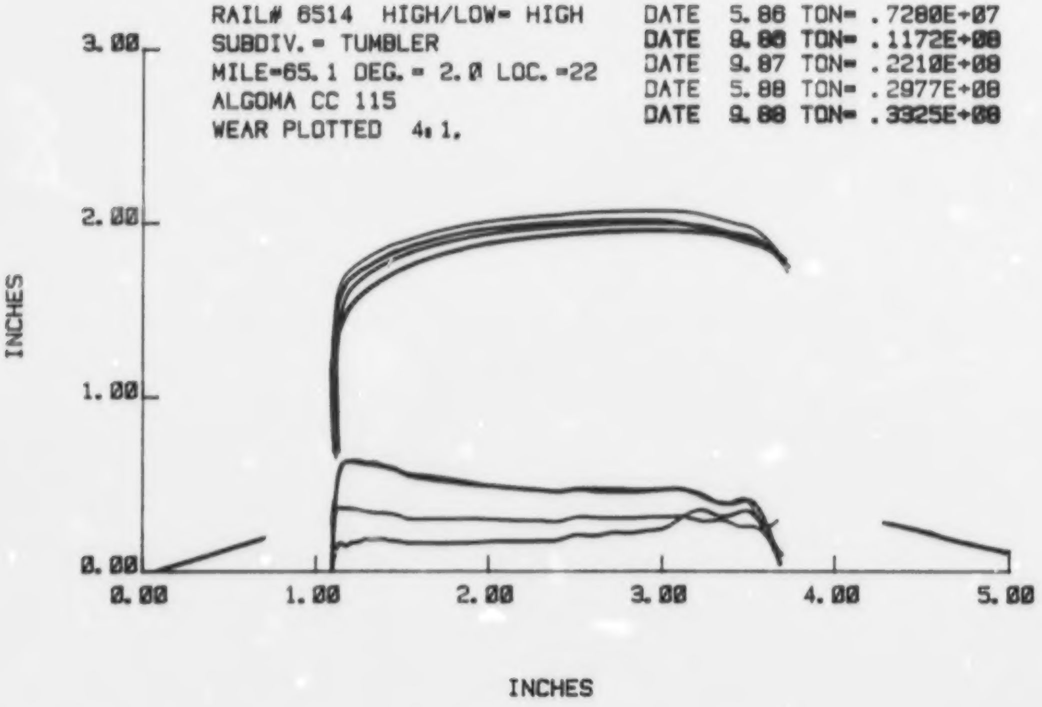

RAIL# 6415 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=64.1 DEG. = 2.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

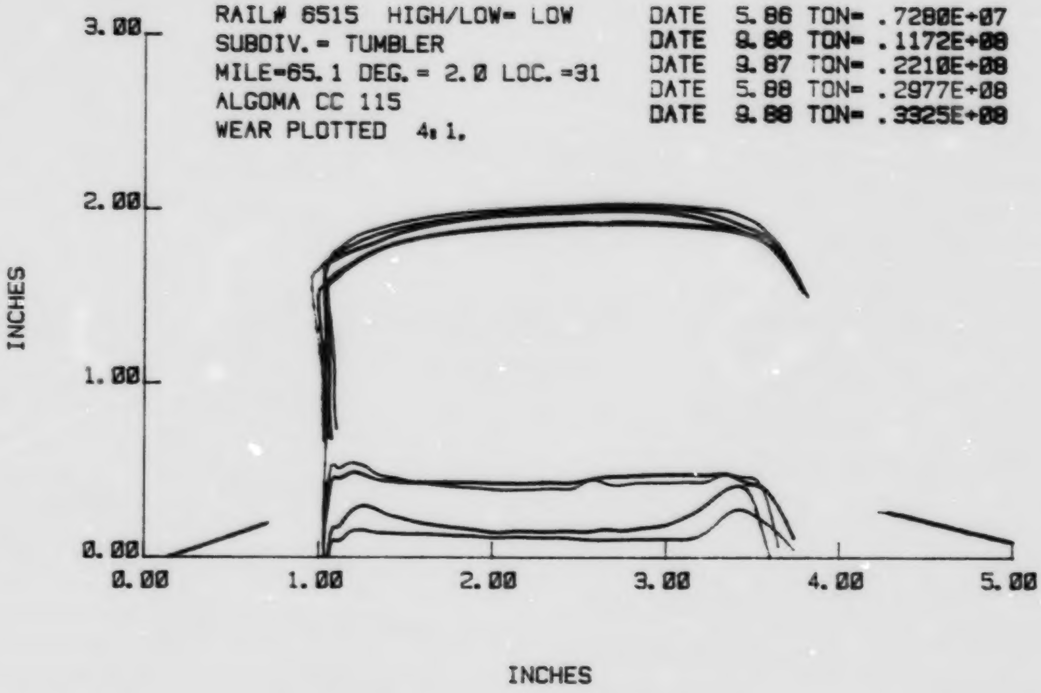

RAIL# 6416 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=64.1 DEG. = 2.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

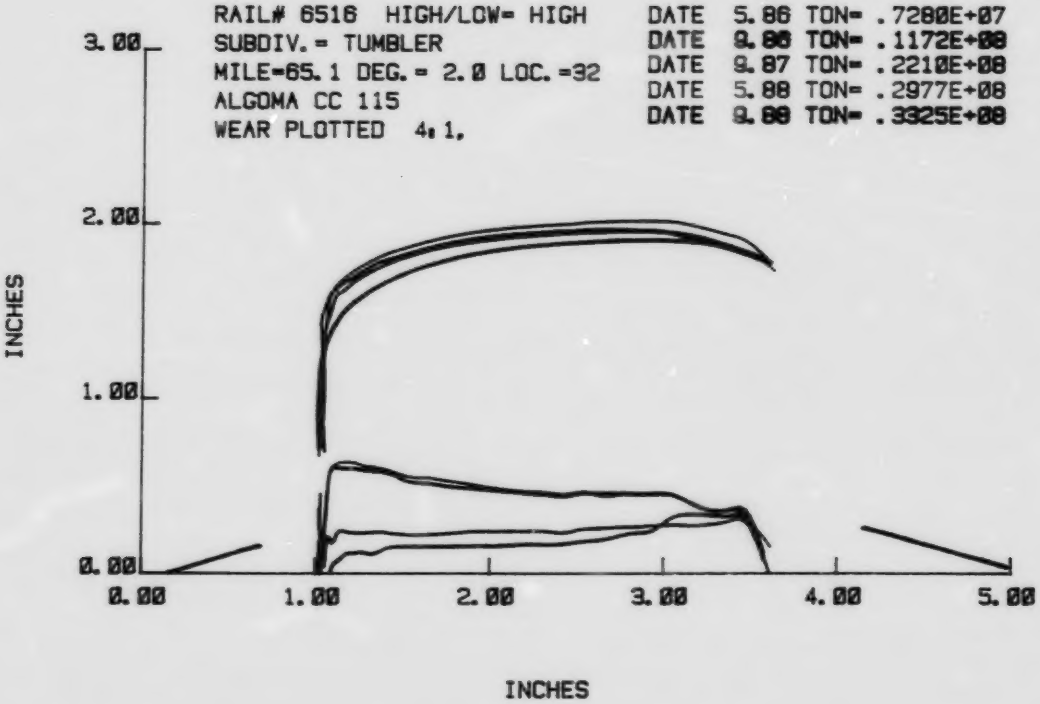

RAIL# 6511 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=65.1 DEG. = 2.0 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.88 TON= .7280E+07
DATE 9.88 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

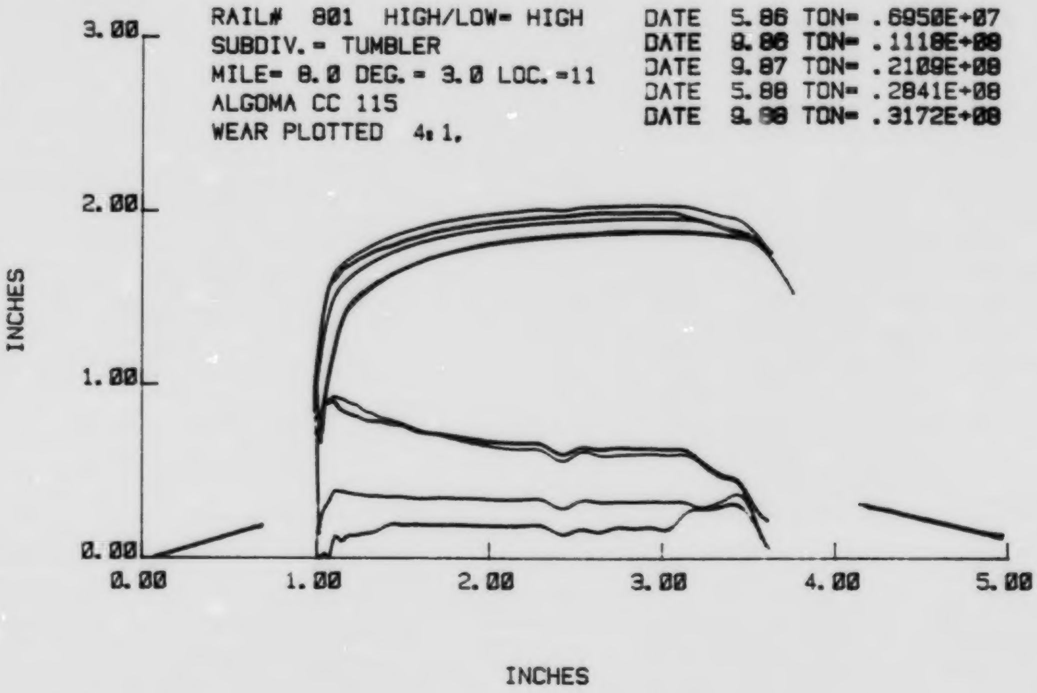

RAIL# 6512 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=65.1 DEG. = 2.0 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.88 TON= .7280E+07
DATE 9.88 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

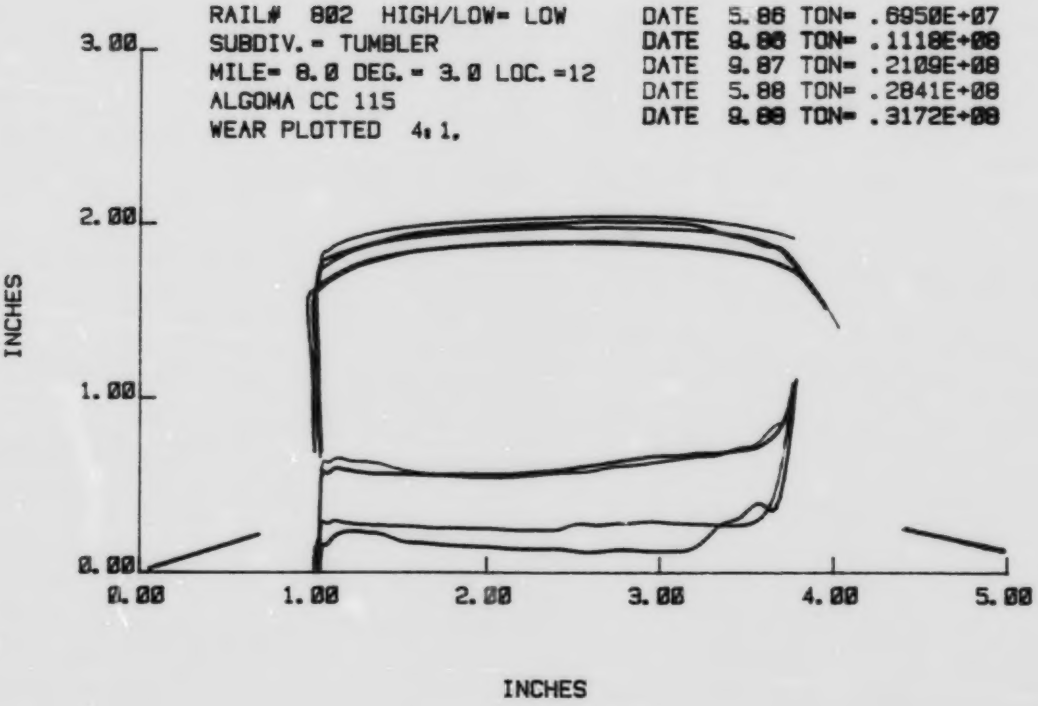

RAIL# 6513 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=65.1 DEG. = 2.0 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

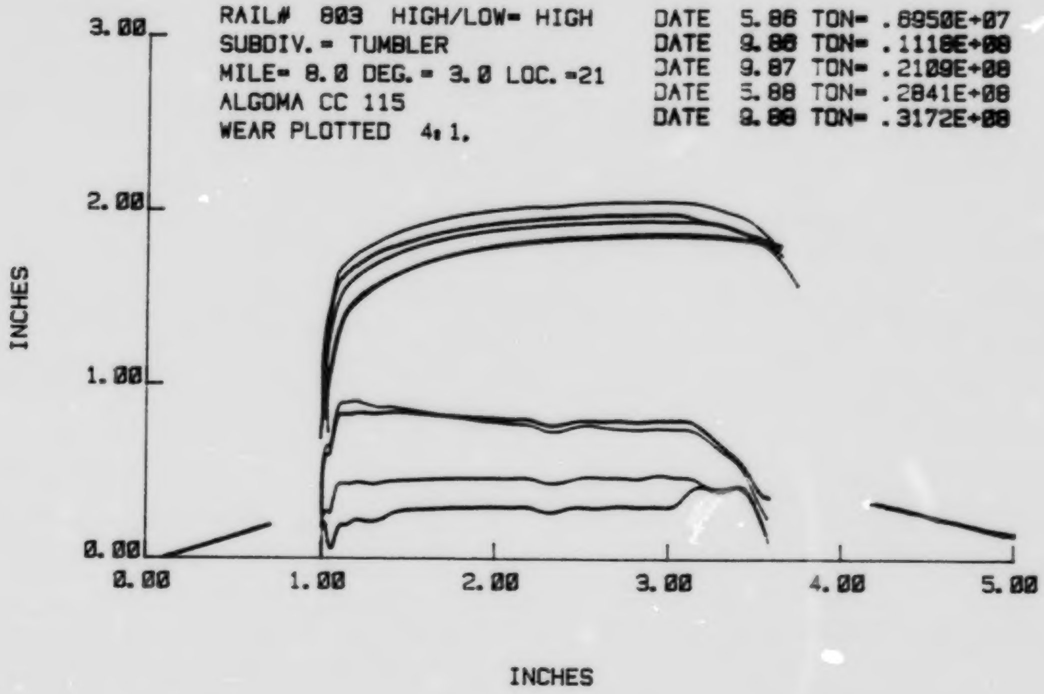

RAIL# 6514 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=65.1 DEG. = 2.0 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

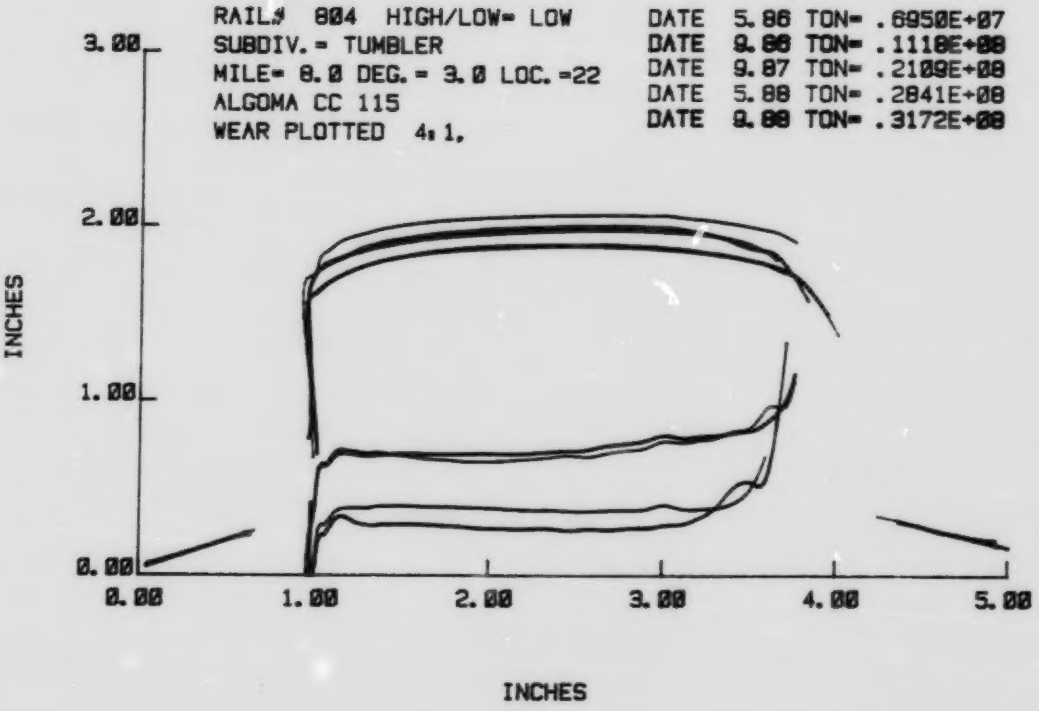

RAIL# 6515 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=65.1 DEG. = 2.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

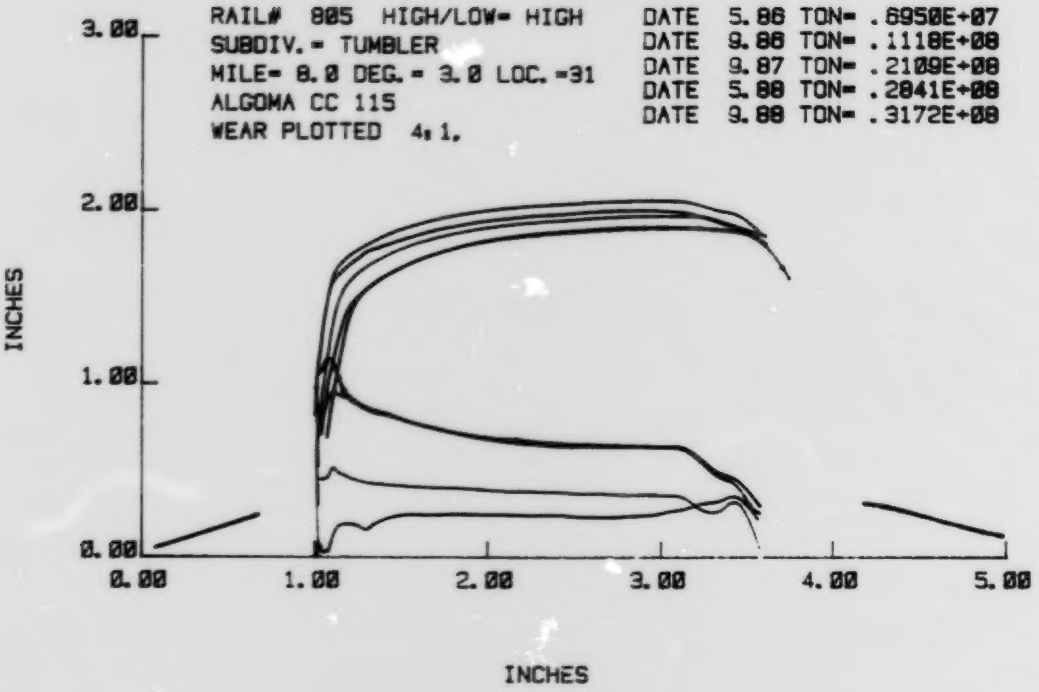

RAIL# 6516 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=65.1 DEG. = 2.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

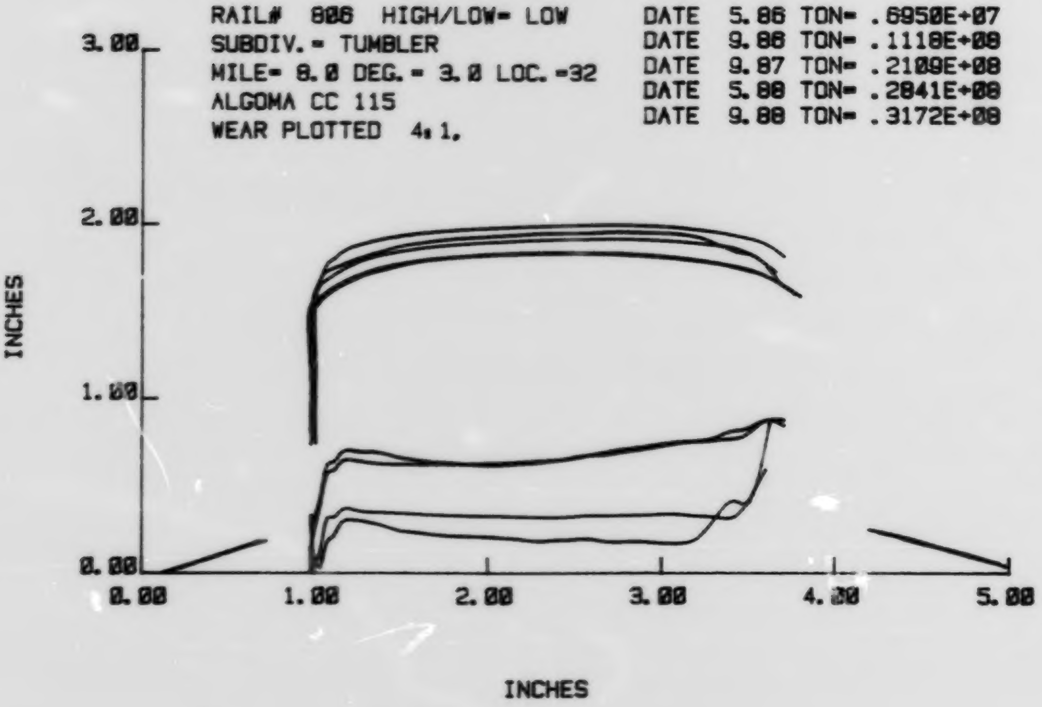

RAIL# 801 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE= 8.0 DEG. = 3.0 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

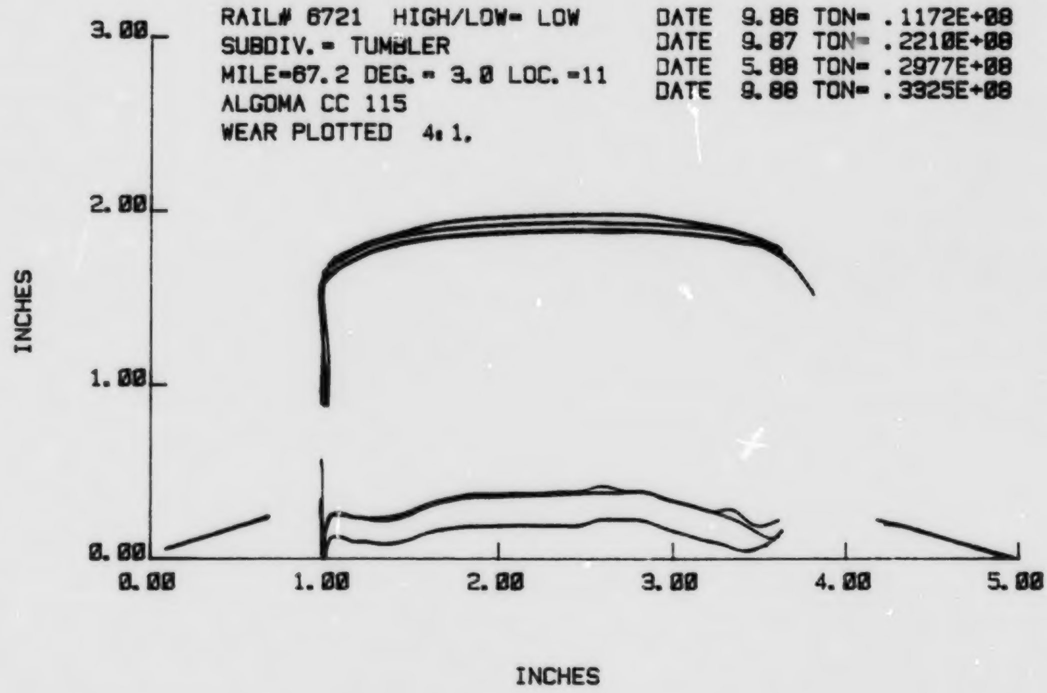

RAIL# 802 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE= 8.0 DEG. = 3.0 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

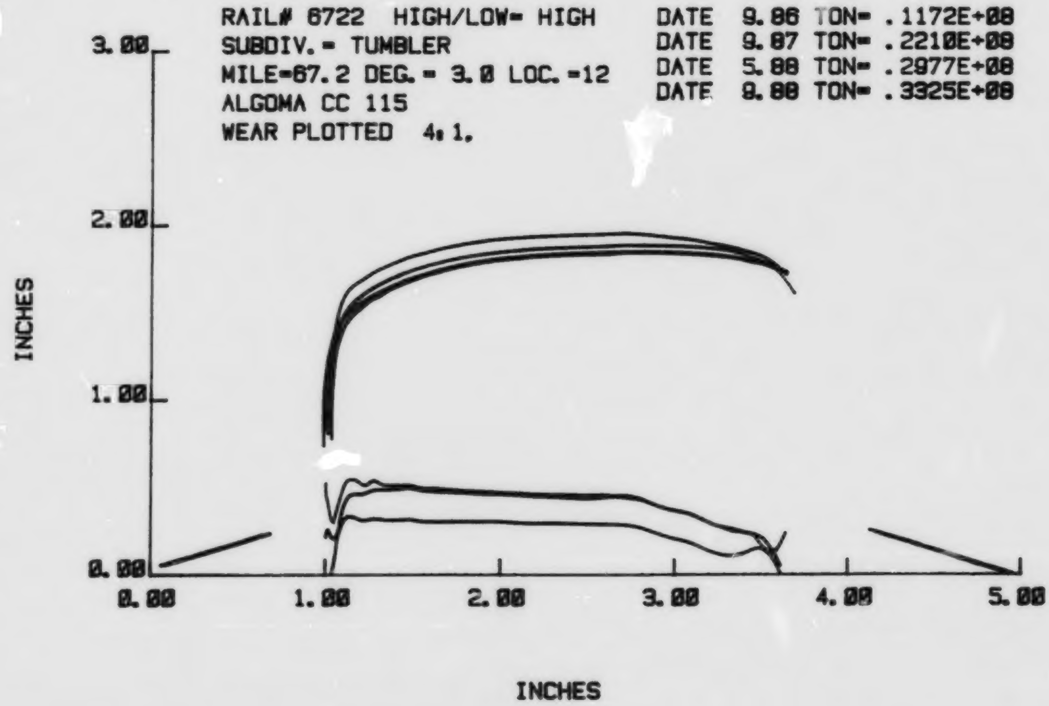

RAIL# 803 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE= 8.0 DEG. = 3.0 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

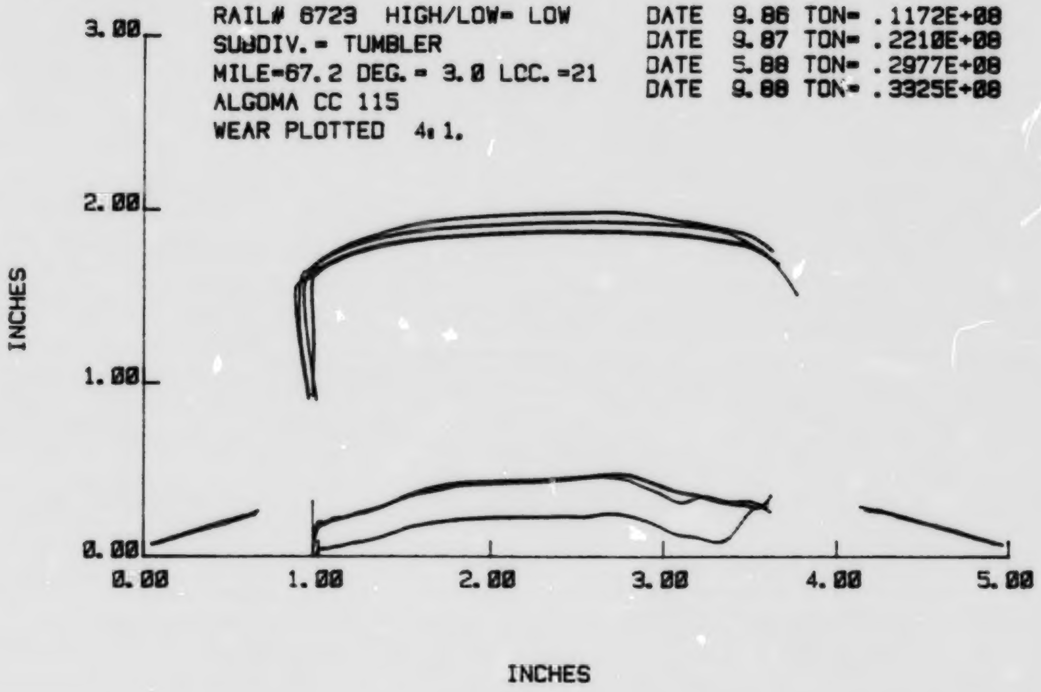

RAIL# 804 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE= 8.0 DEG. = 3.0 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

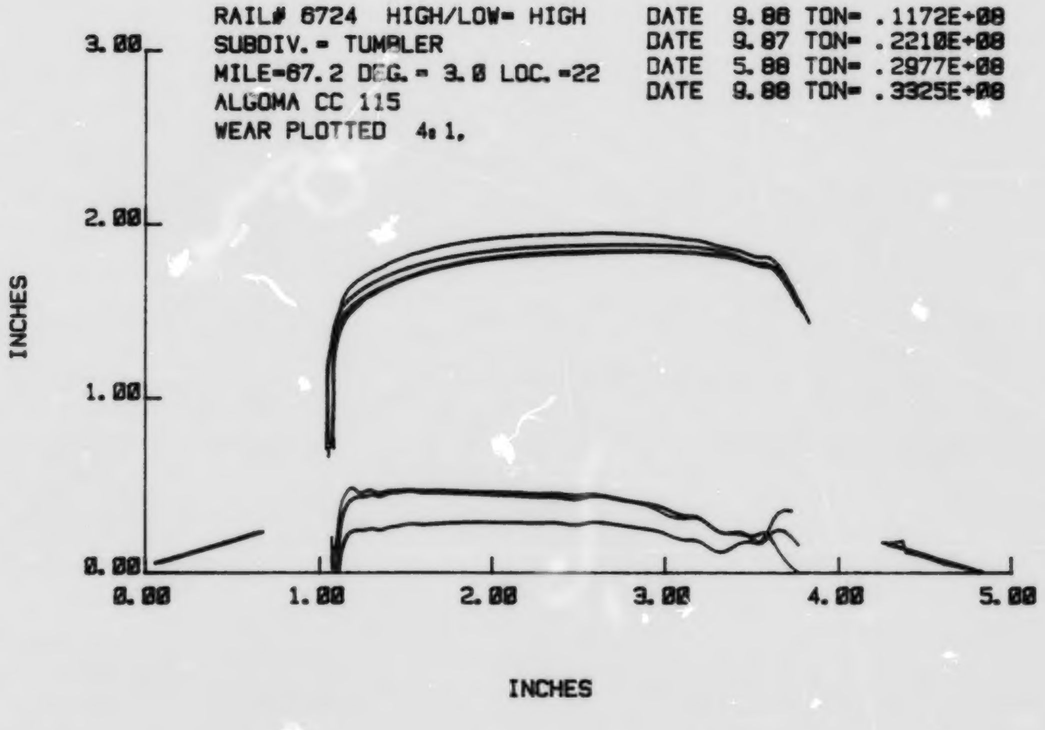

RAIL# 805 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE= 8.0 DEG. = 3.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

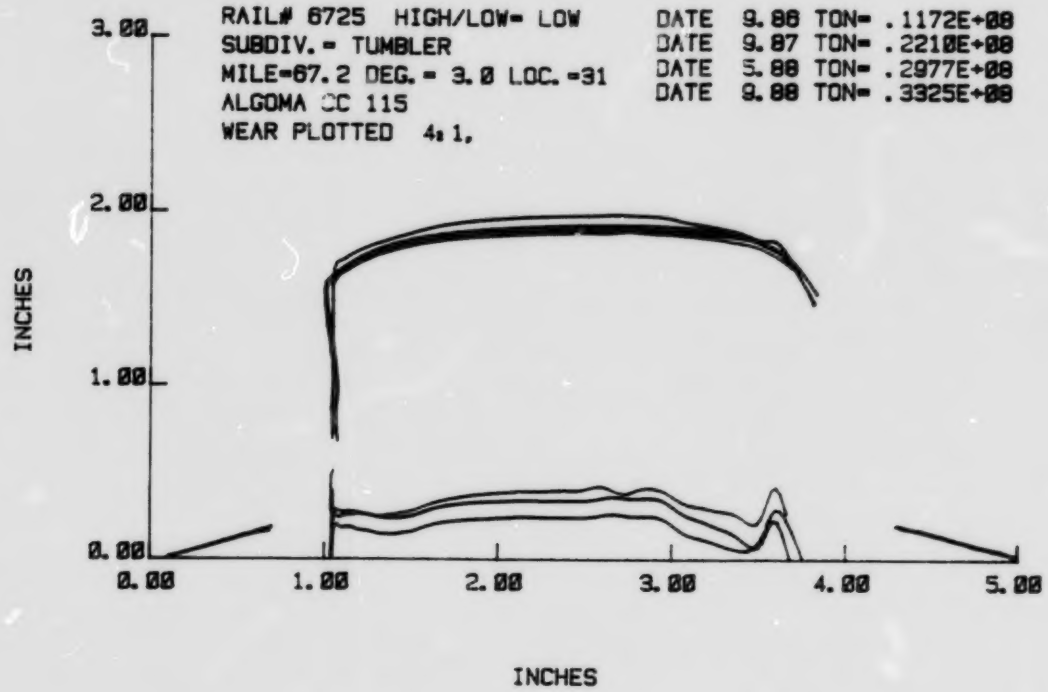

RAIL# 806 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE= 8.0 DEG. = 3.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

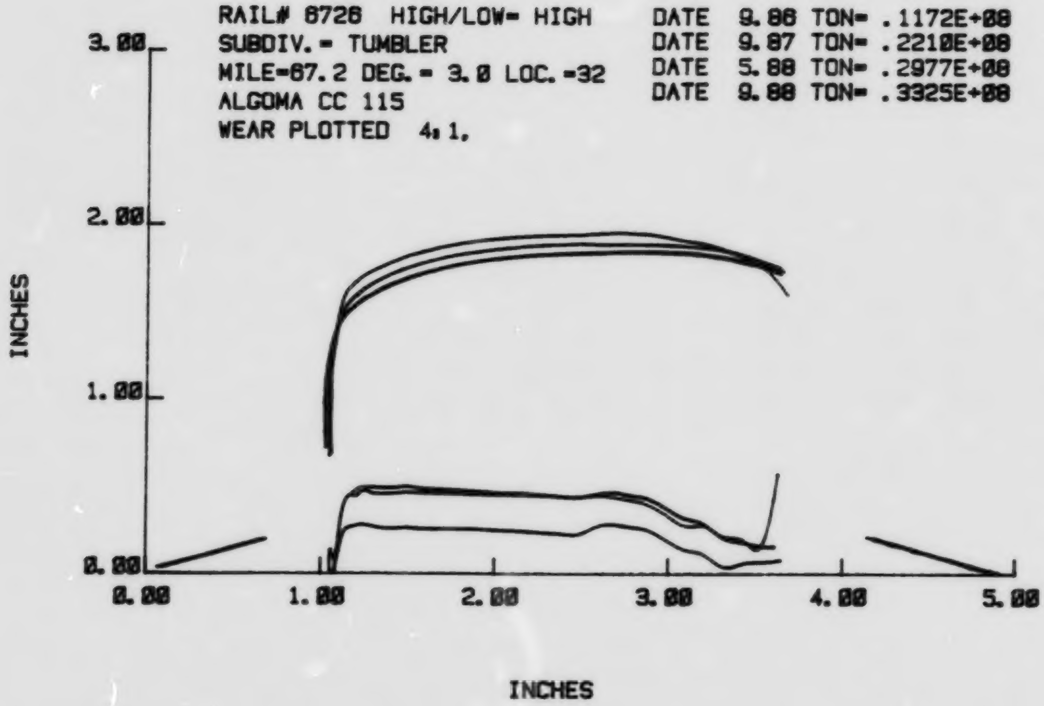

RAIL# 6721 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=67.2 DEG. = 3.0 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

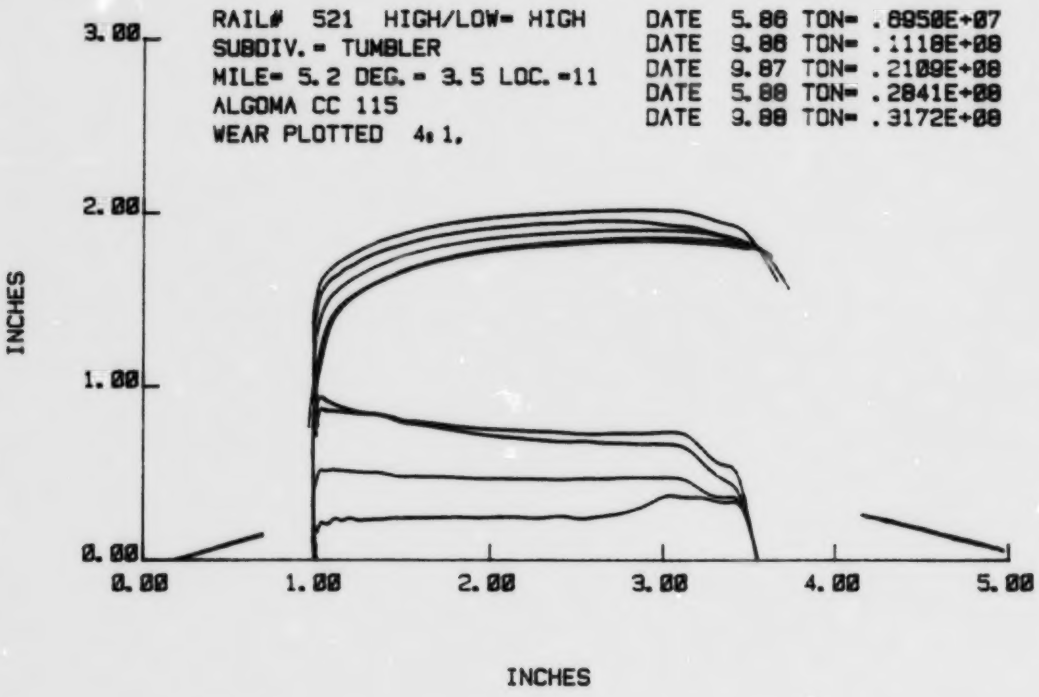

RAIL# 6722 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=67.2 DEG. = 3.0 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 8.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

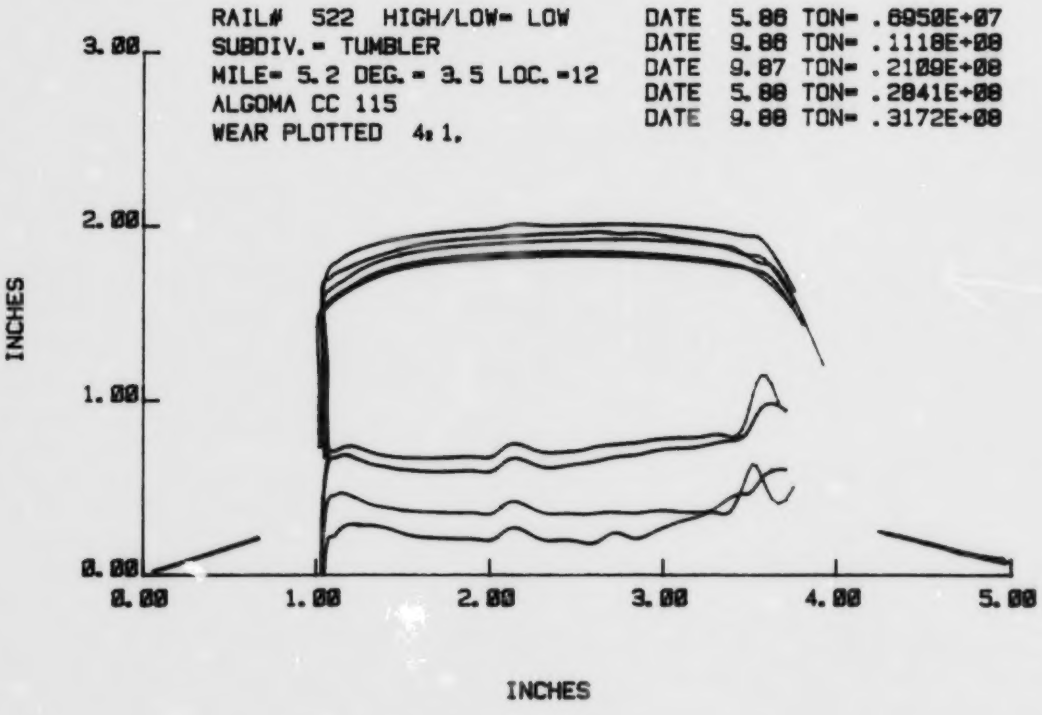

RAIL# 6723 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=67.2 DEG. = 3.0 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

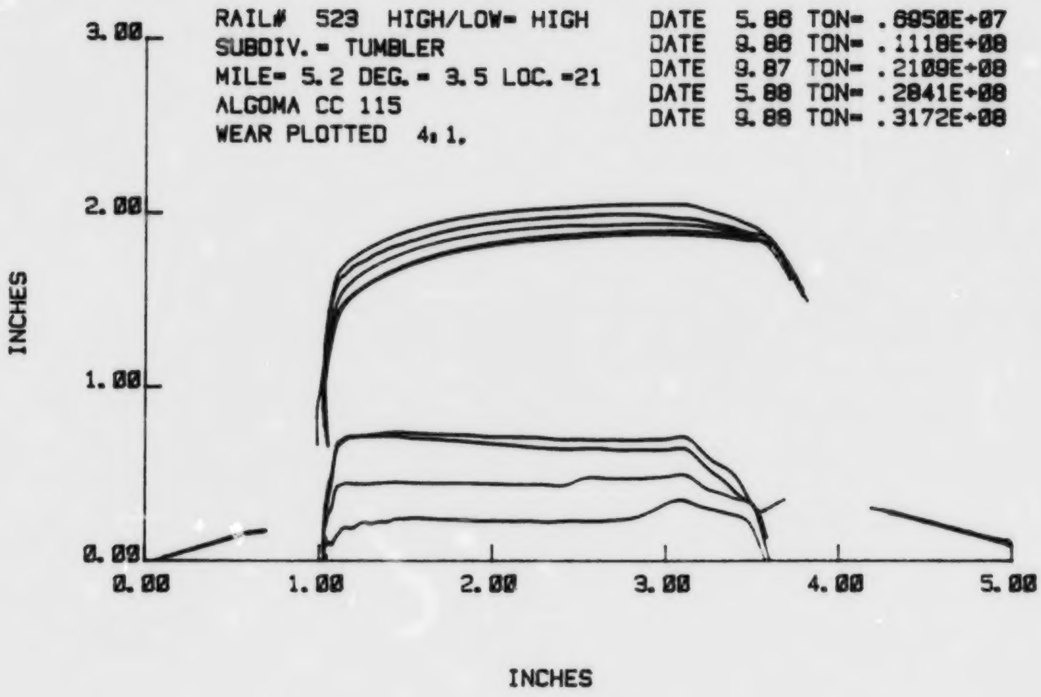

RAIL# 6724 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=67.2 DEG. = 3.0 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

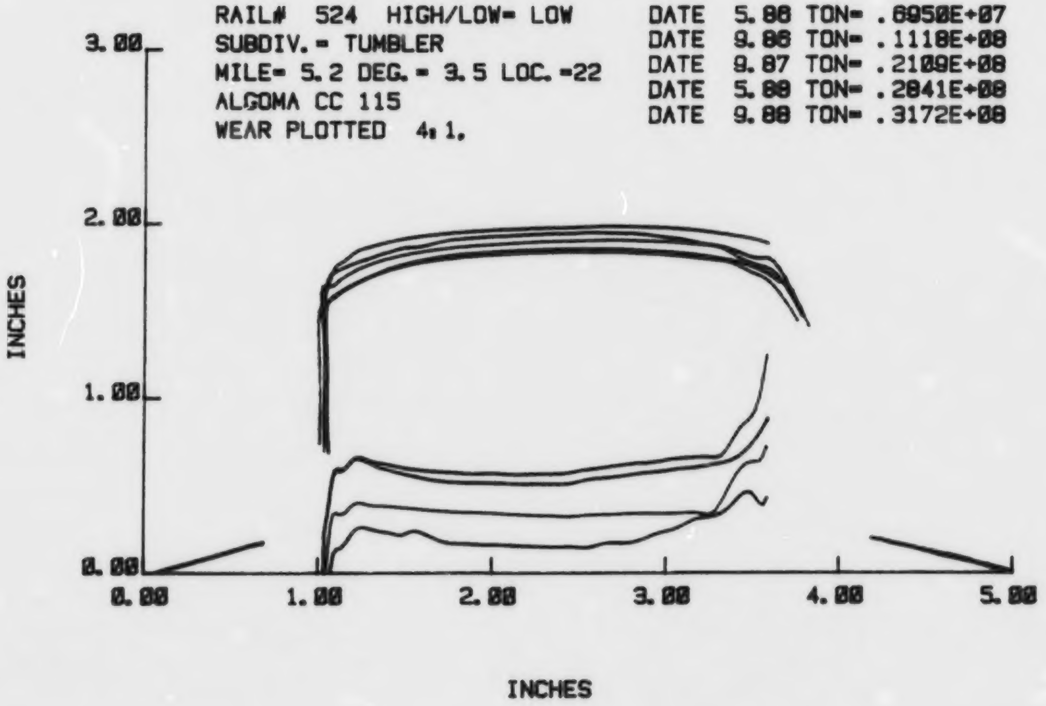

RAIL# 6725 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=67.2 DEG.= 3.0 LOC.=31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

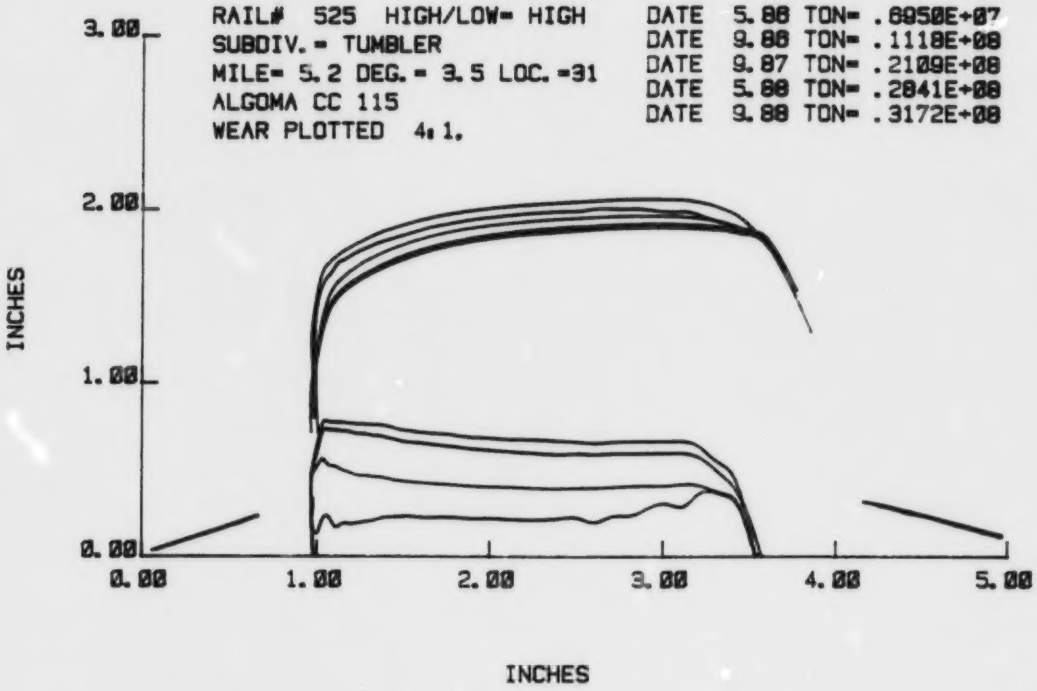

RAIL# 6726 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE=67.2 DEG.= 3.0 LOC.=32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2977E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

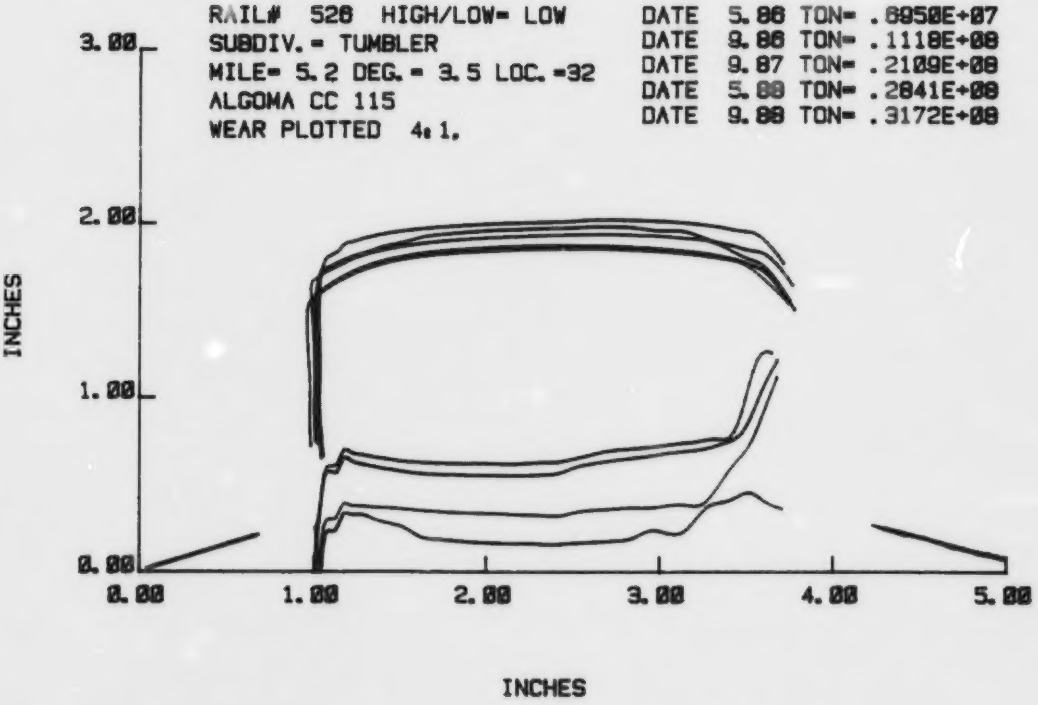

RAIL# 521 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE= 5.2 DEG. = 3.5 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

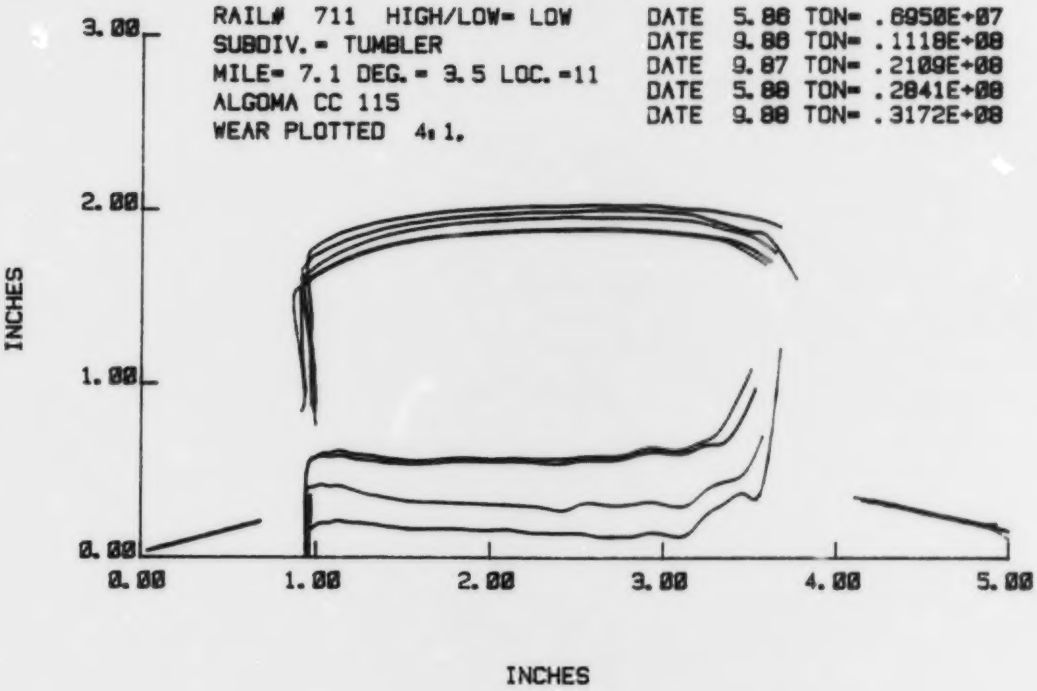

RAIL# 522 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE= 5.2 DEG. = 3.5 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

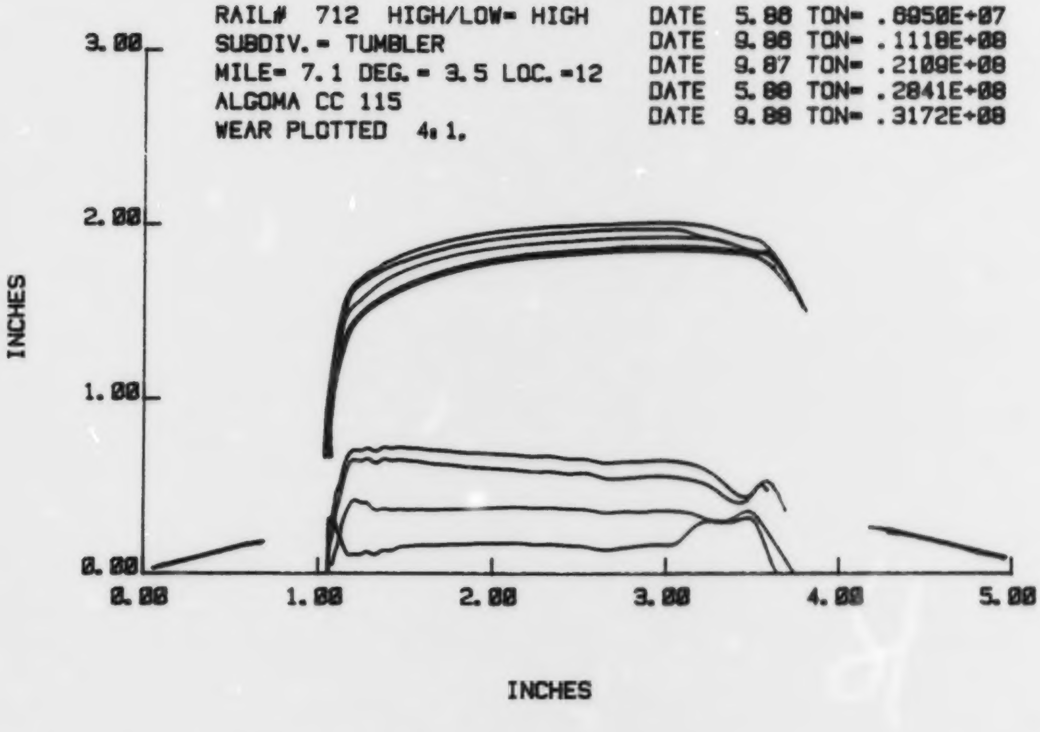

RAIL# 523 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE= 5.2 DEG. = 3.5 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

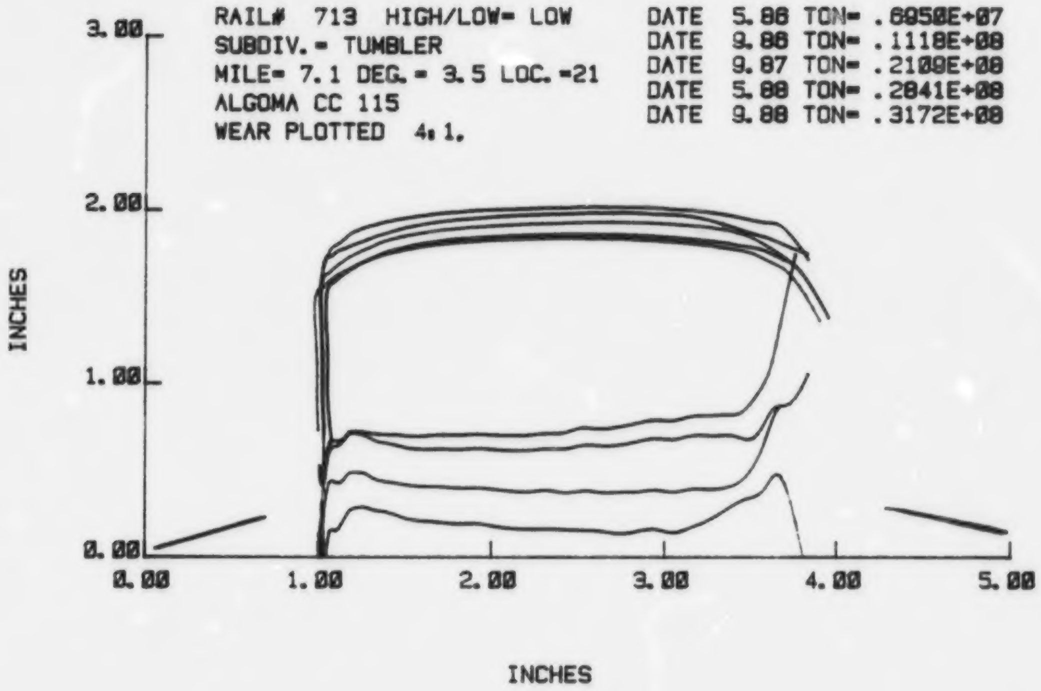

RAIL# 524 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE= 5.2 DEG. = 3.5 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1110E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

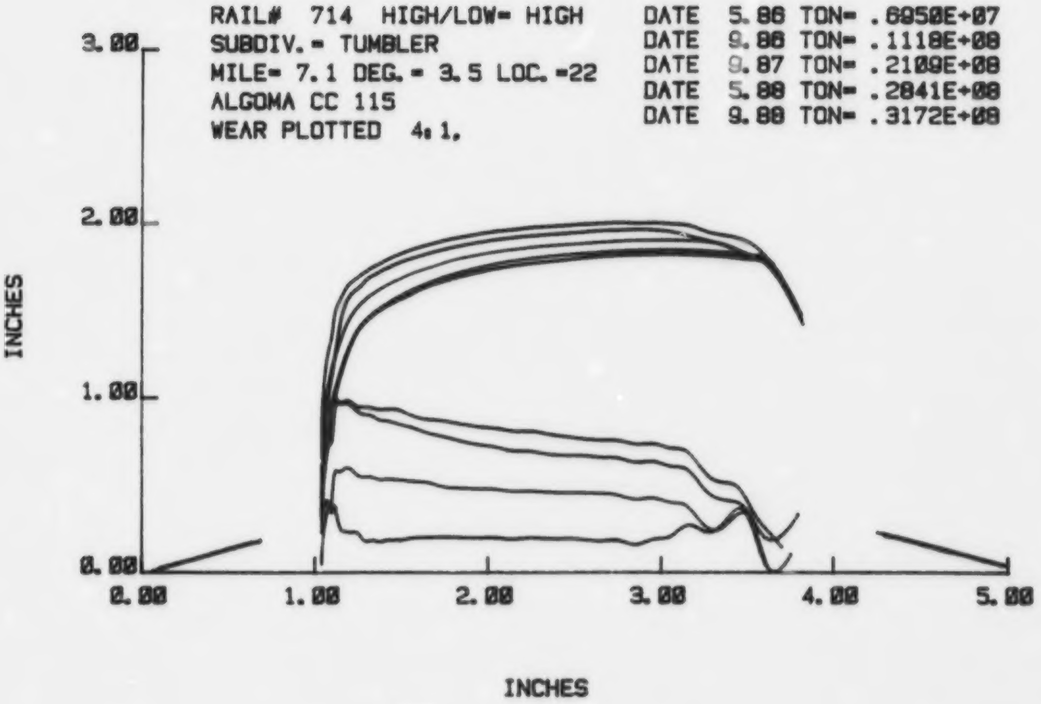

RAIL# 525 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE= 5.2 DEG. = 3.5 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

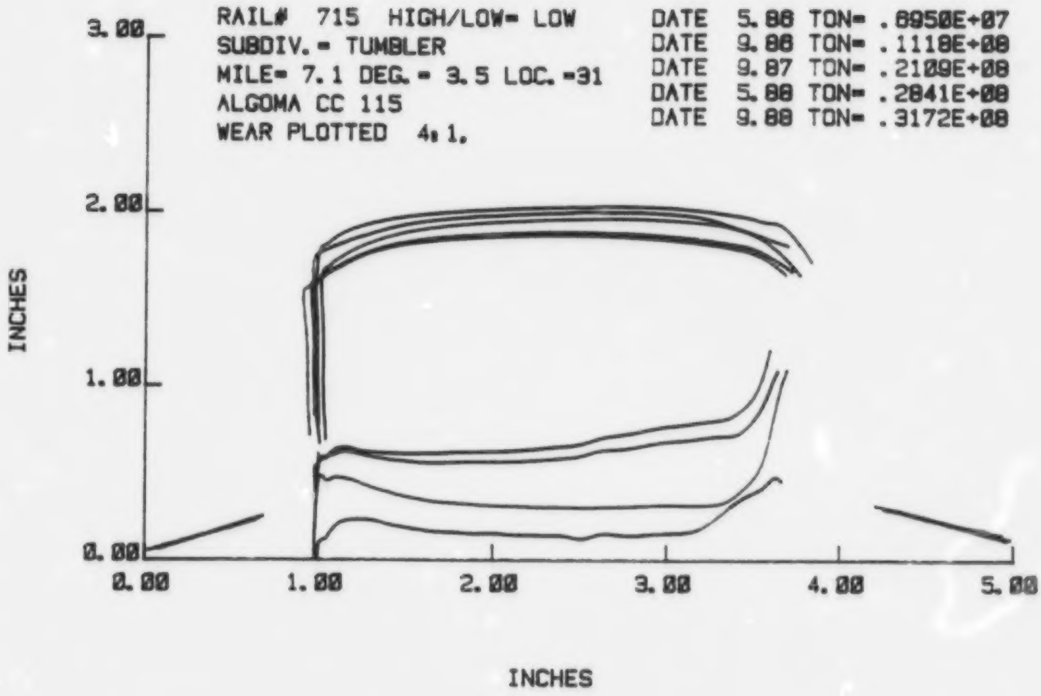

RAIL# 526 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE= 5.2 DEG. = 3.5 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

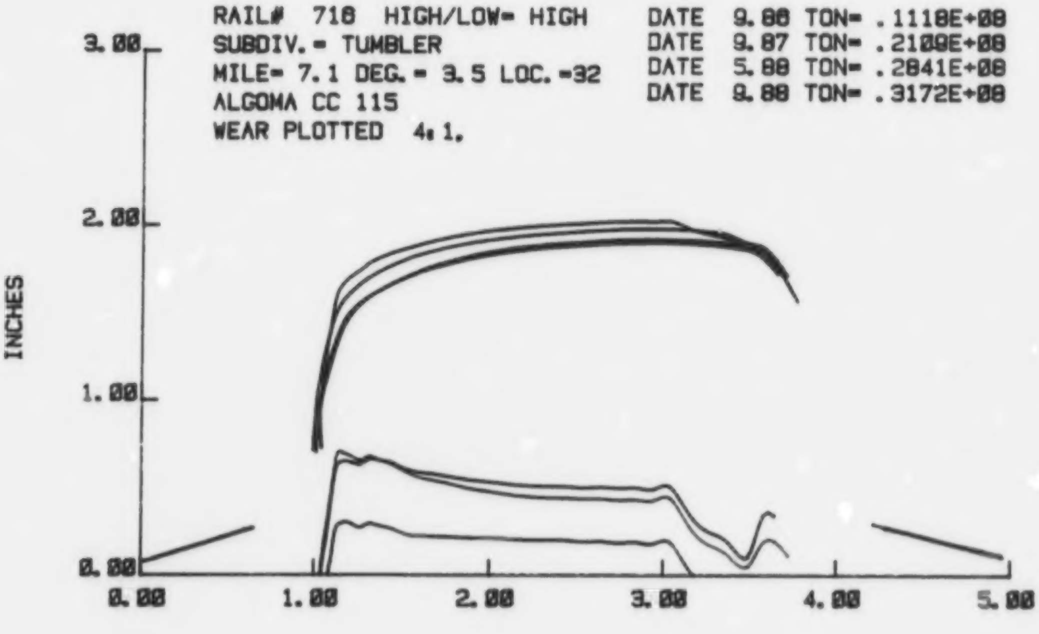

RAIL# 711 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE= 7.1 DEG. = 3.5 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.88 TON= .6950E+07
DATE 9.88 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

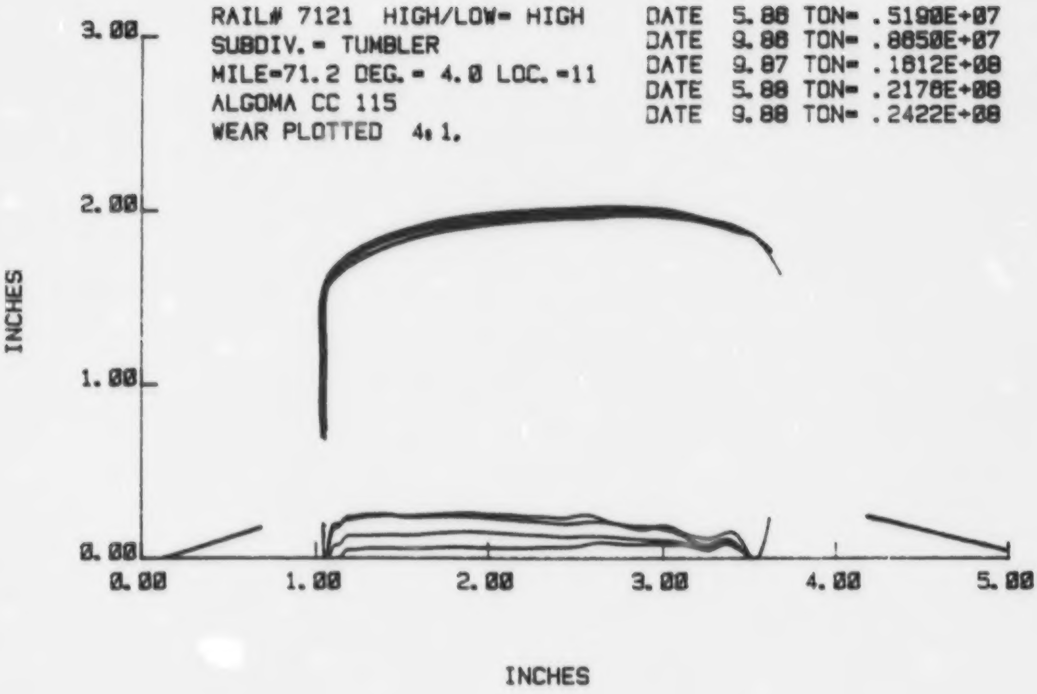

RAIL# 712 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE= 7.1 DEG. = 3.5 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.88 TON= .6950E+07
DATE 9.88 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

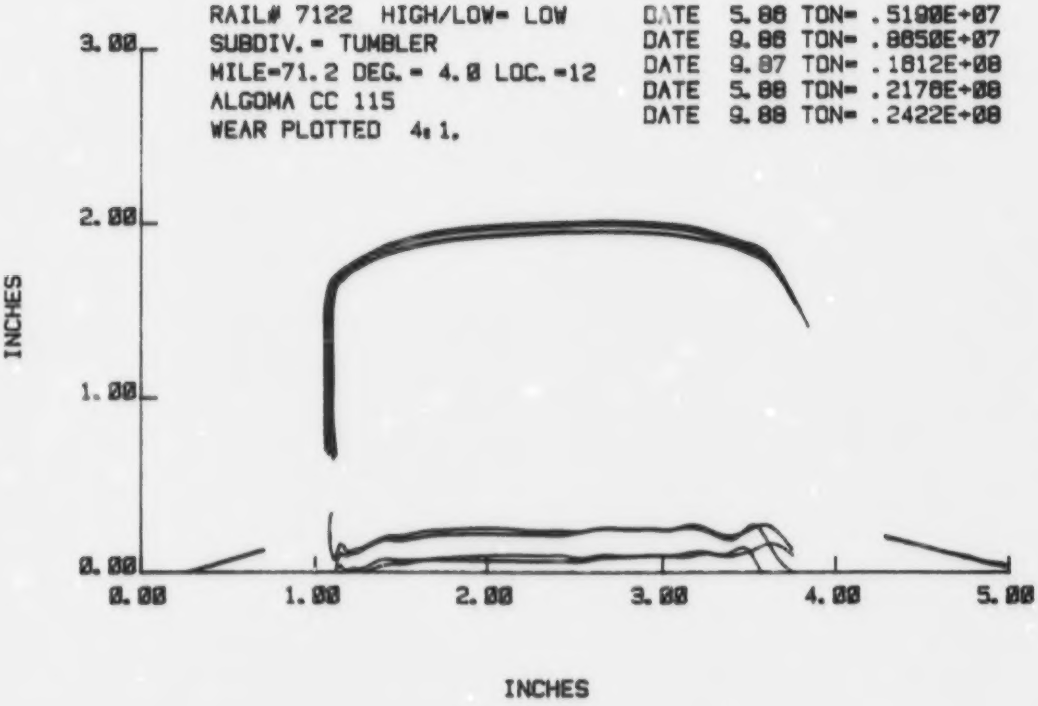

RAIL# 713 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE= 7.1 DEG. = 3.5 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .6050E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

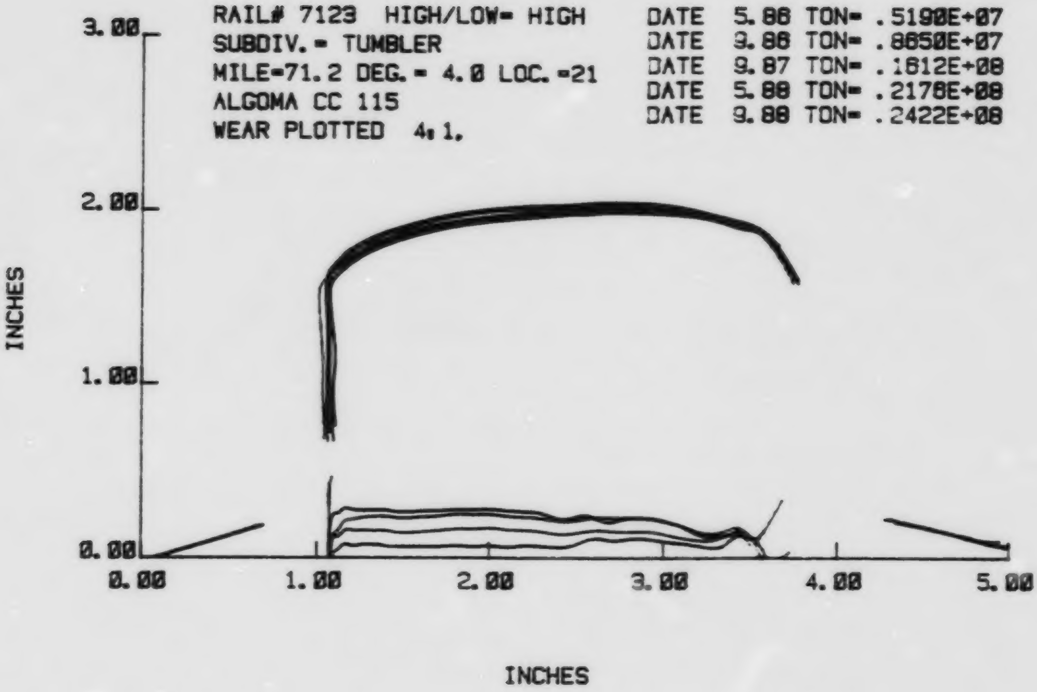

RAIL# 714 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE= 7.1 DEG. = 3.5 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .6050E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

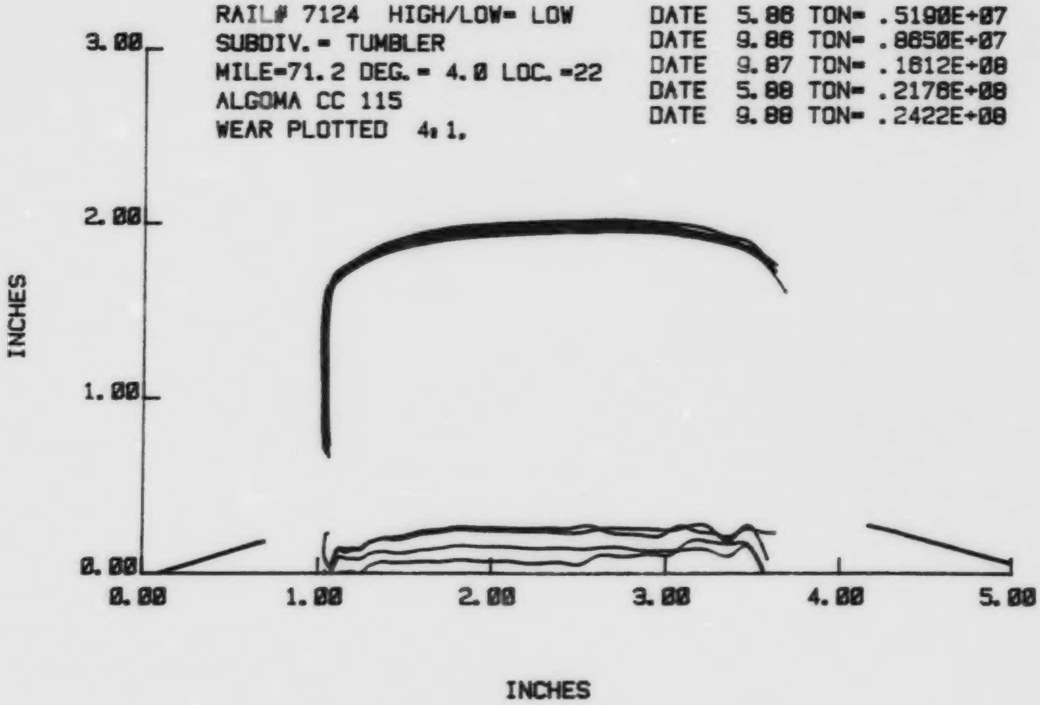

RAIL# 715 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE= 7.1 DEG. = 3.5 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

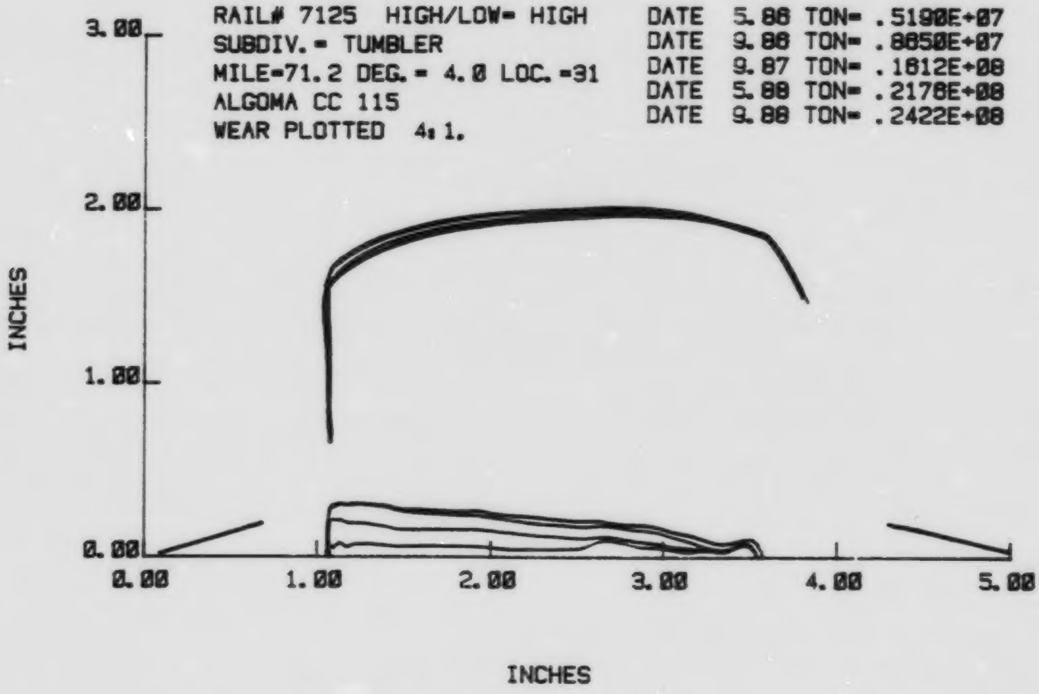

RAIL# 716 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE= 7.1 DEG. = 3.5 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

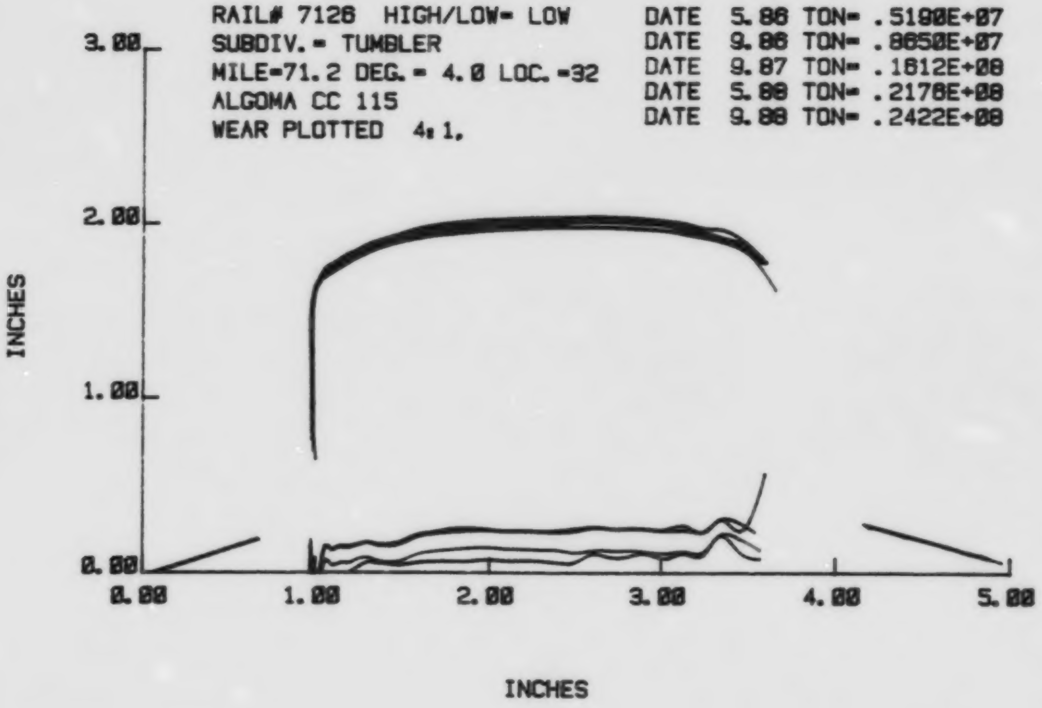

RAIL# 7121 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=71.2 DEG. = 4.0 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.88 TON= .5190E+07
DATE 9.88 TON= .8850E+07
DATE 9.87 TON= .1812E+08
DATE 5.88 TON= .2178E+08
DATE 9.88 TON= .2422E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

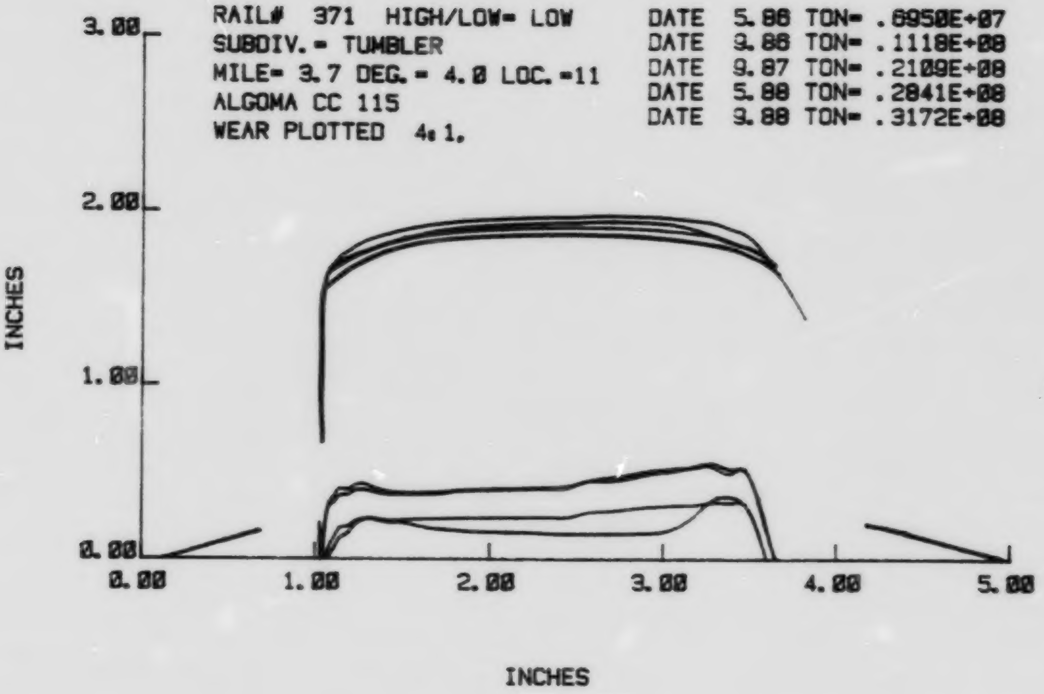

RAIL# 7122 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=71.2 DEG. = 4.0 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.88 TON= .5190E+07
DATE 9.88 TON= .8850E+07
DATE 9.87 TON= .1812E+08
DATE 5.88 TON= .2178E+08
DATE 9.88 TON= .2422E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

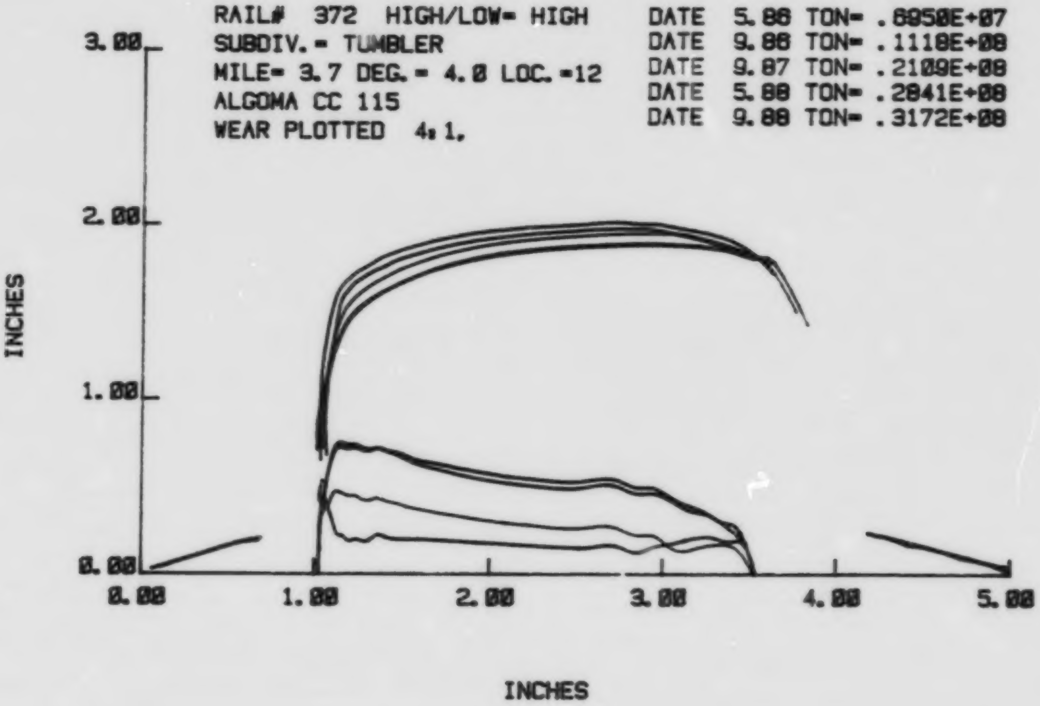

RAIL# 7123 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=71.2 DEG. = 4.0 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .5190E+07
DATE 9.86 TON= .8650E+07
DATE 9.87 TON= .1612E+08
DATE 5.88 TON= .2176E+08
DATE 9.88 TON= .2422E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

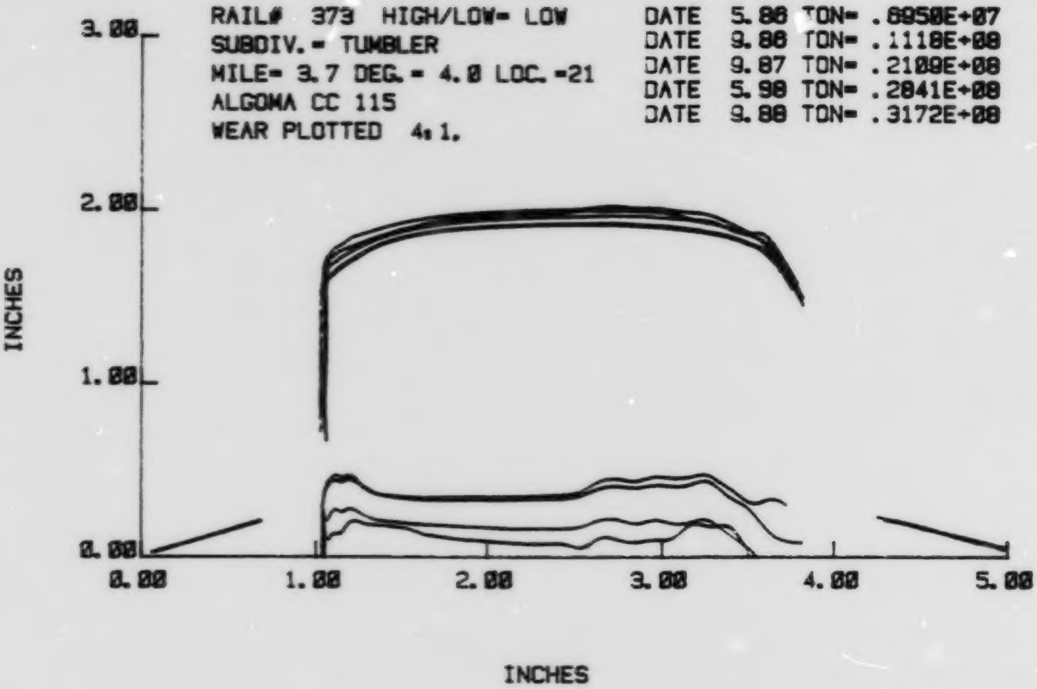

RAIL# 7124 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=71.2 DEG. = 4.0 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .5190E+07
DATE 9.86 TON= .8650E+07
DATE 9.87 TON= .1612E+08
DATE 5.88 TON= .2176E+08
DATE 9.88 TON= .2422E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

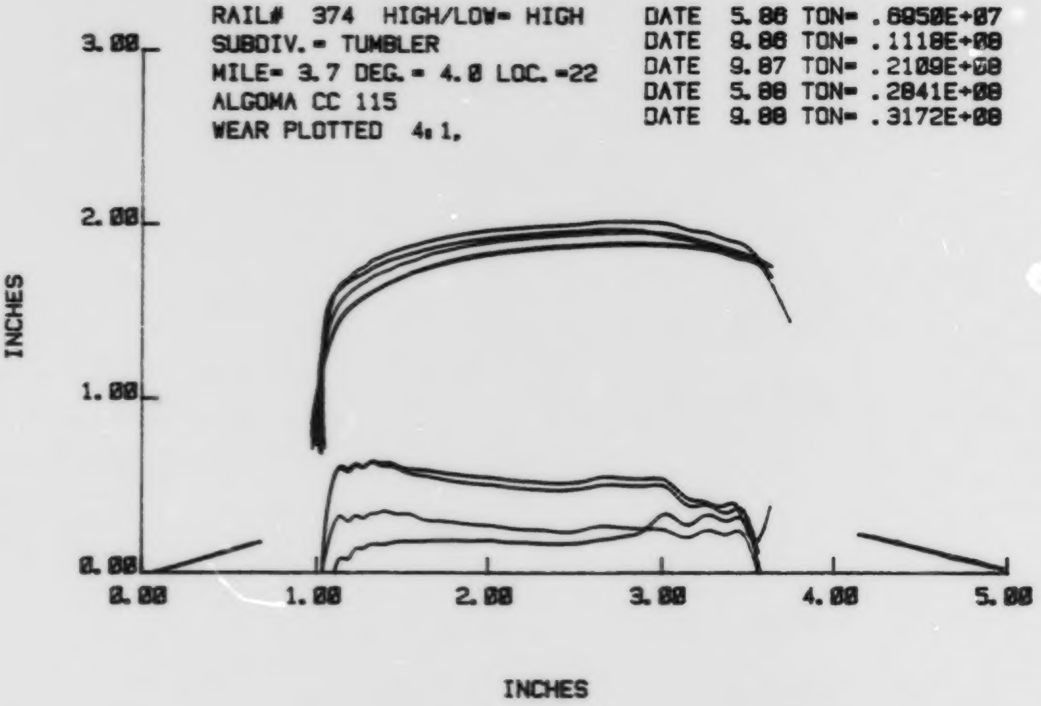

RAIL# 7125 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=71.2 DEG. = 4.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .5190E+07
DATE 9.86 TON= .8650E+07
DATE 9.87 TON= .1812E+08
DATE 5.88 TON= .2178E+08
DATE 9.88 TON= .2422E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

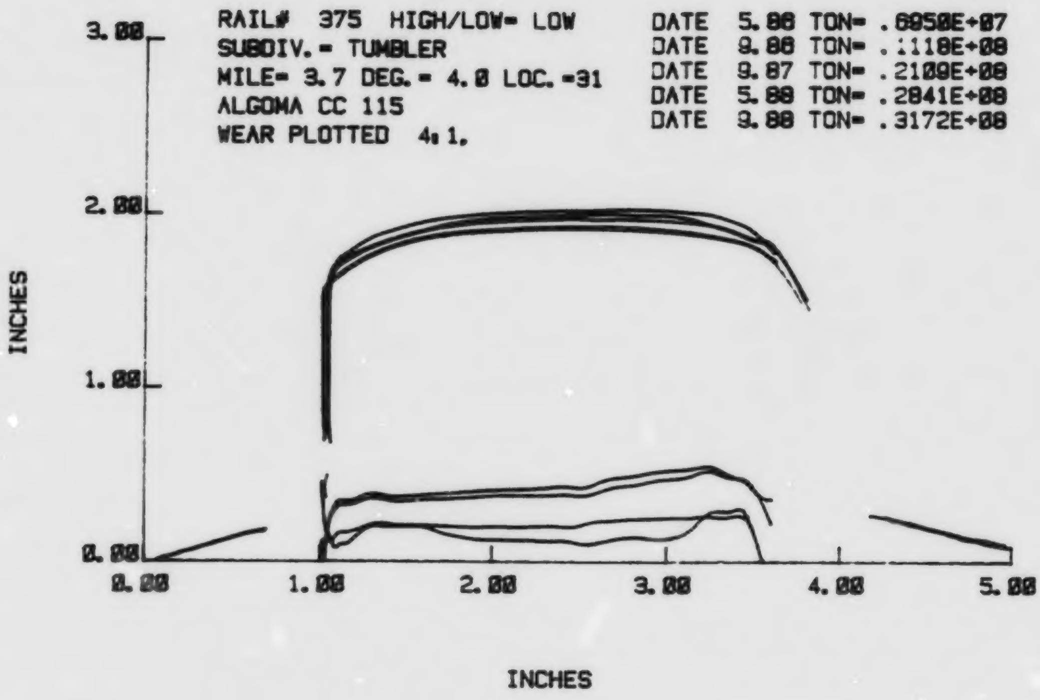

RAIL# 7126 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=71.2 DEG. = 4.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .5190E+07
DATE 9.86 TON= .8650E+07
DATE 9.87 TON= .1812E+08
DATE 5.88 TON= .2178E+08
DATE 9.88 TON= .2422E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

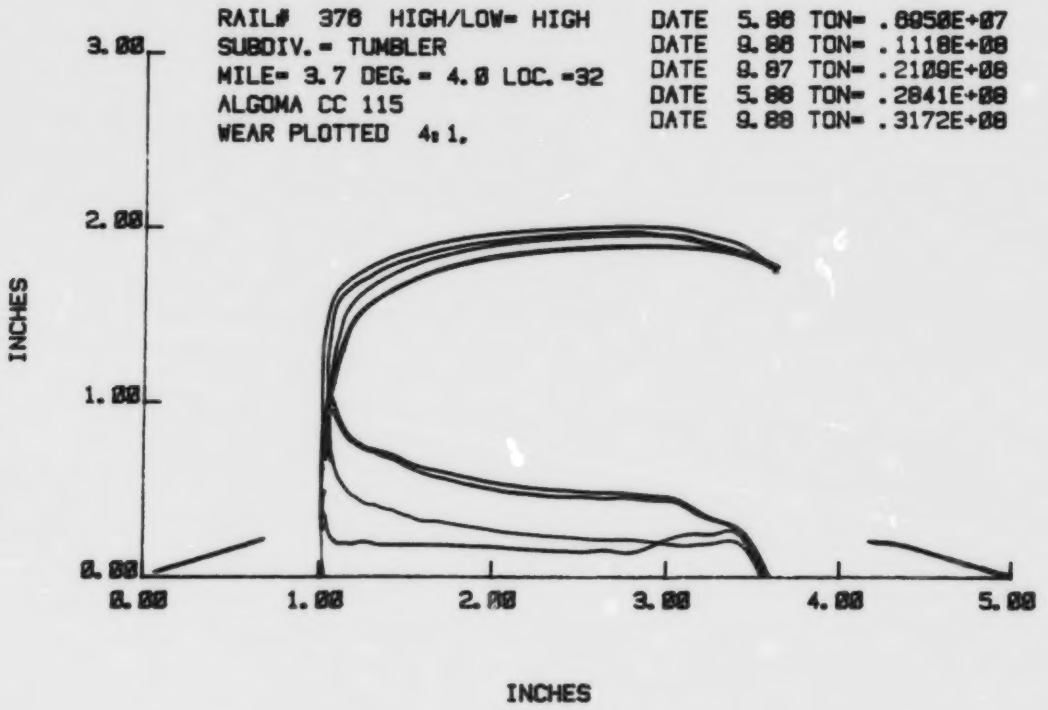

RAIL# 371 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE= 3.7 DEG. = 4.0 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

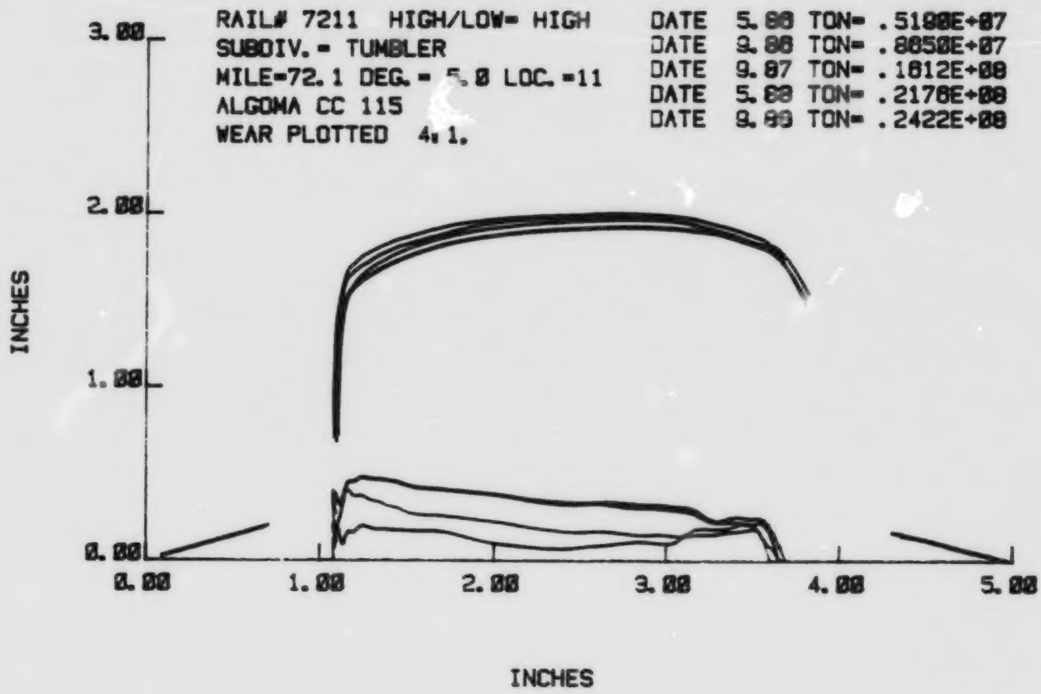

RAIL# 372 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE= 3.7 DEG. = 4.0 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

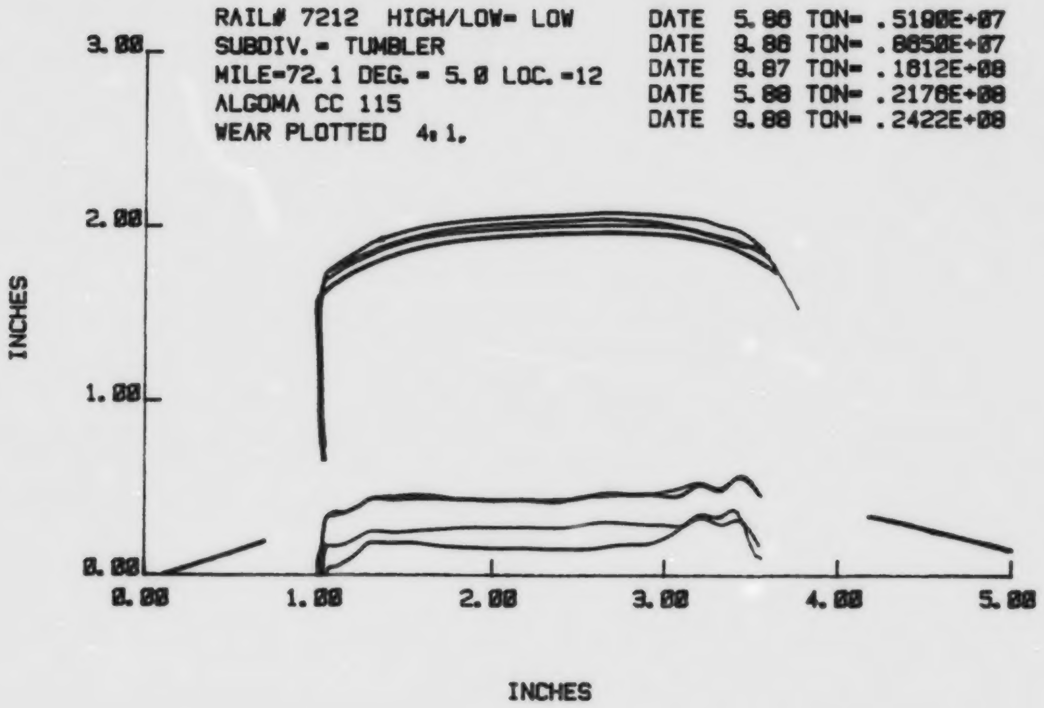

RAIL# 373 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE= 3.7 DEG.= 4.0 LOC.=21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.98 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

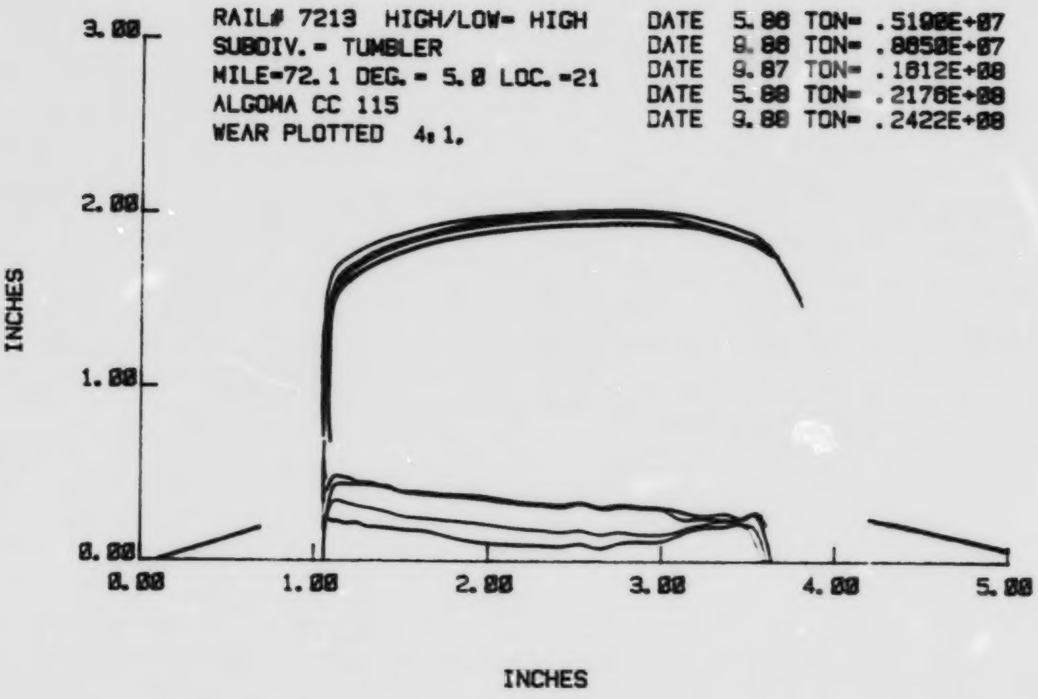

RAIL# 374 HIGH/LOW= HIGH
SUBDIV.= TUMBLER
MILE= 3.7 DEG.= 4.0 LOC.=22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6850E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

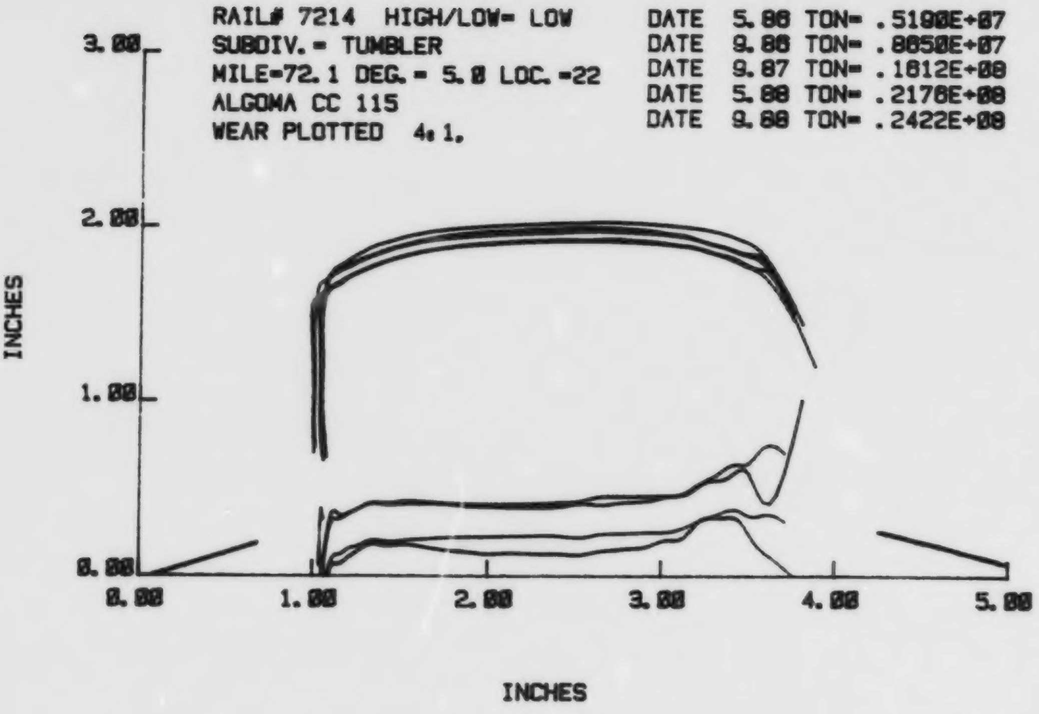

RAIL# 375 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE= 3.7 DEG. = 4.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

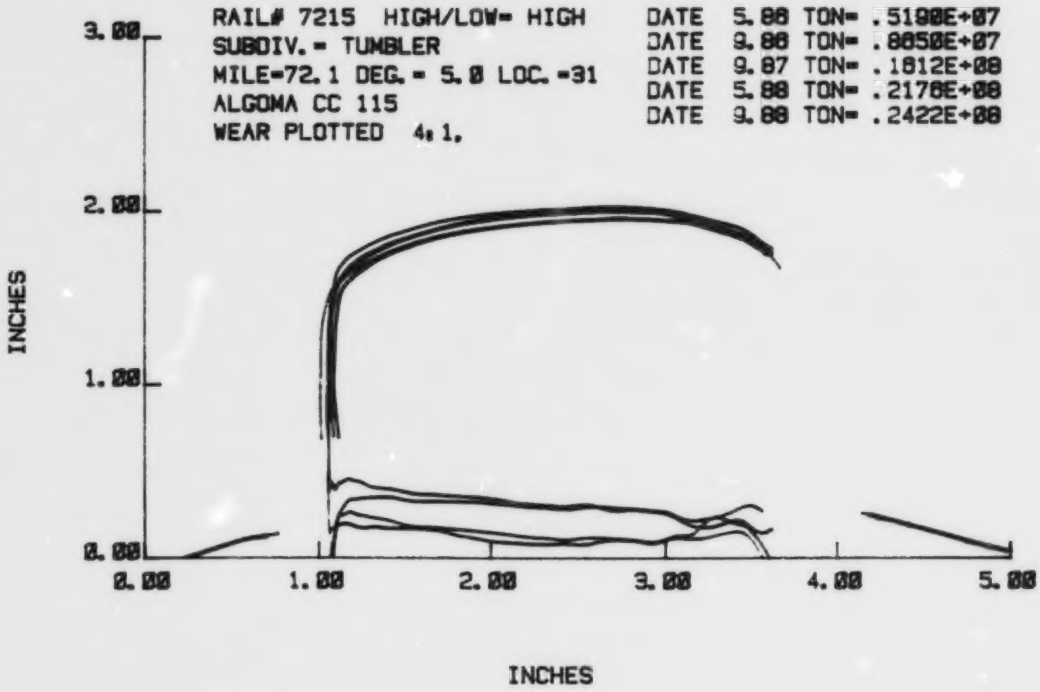

RAIL# 376 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE= 3.7 DEG. = 4.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .6950E+07
DATE 9.86 TON= .1118E+08
DATE 9.87 TON= .2109E+08
DATE 5.88 TON= .2841E+08
DATE 9.88 TON= .3172E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

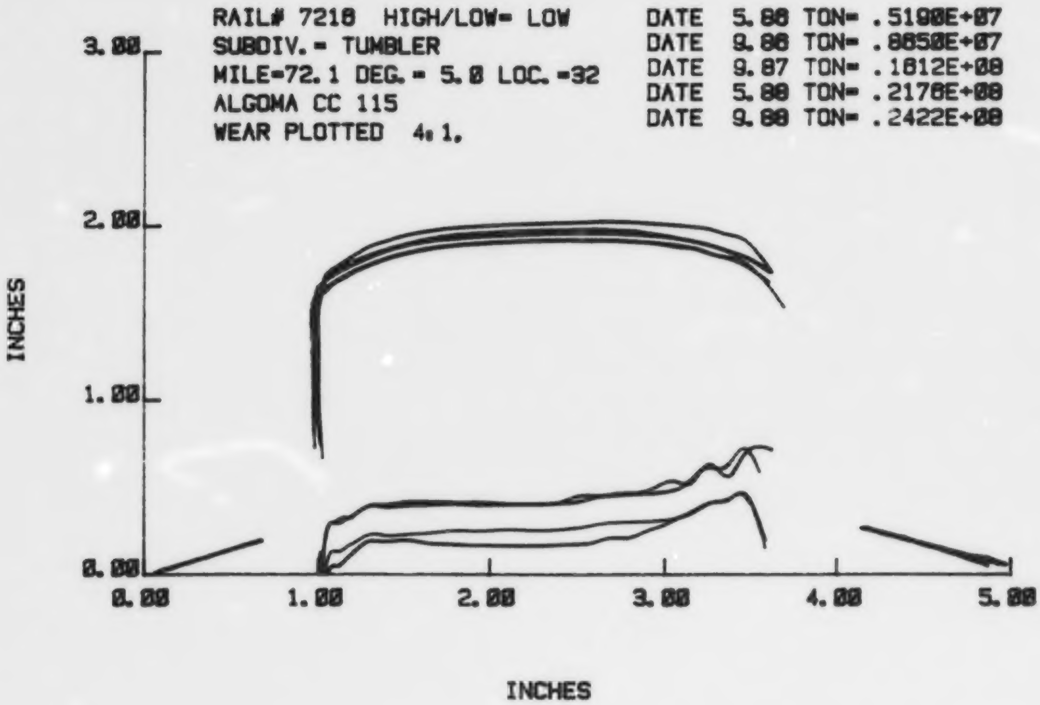

RAIL# 7211 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=72.1 DEG. = 5.0 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .5180E+07
DATE 9.86 TON= .8850E+07
DATE 9.87 TON= .1612E+08
DATE 5.88 TON= .2176E+08
DATE 9.88 TON= .2422E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

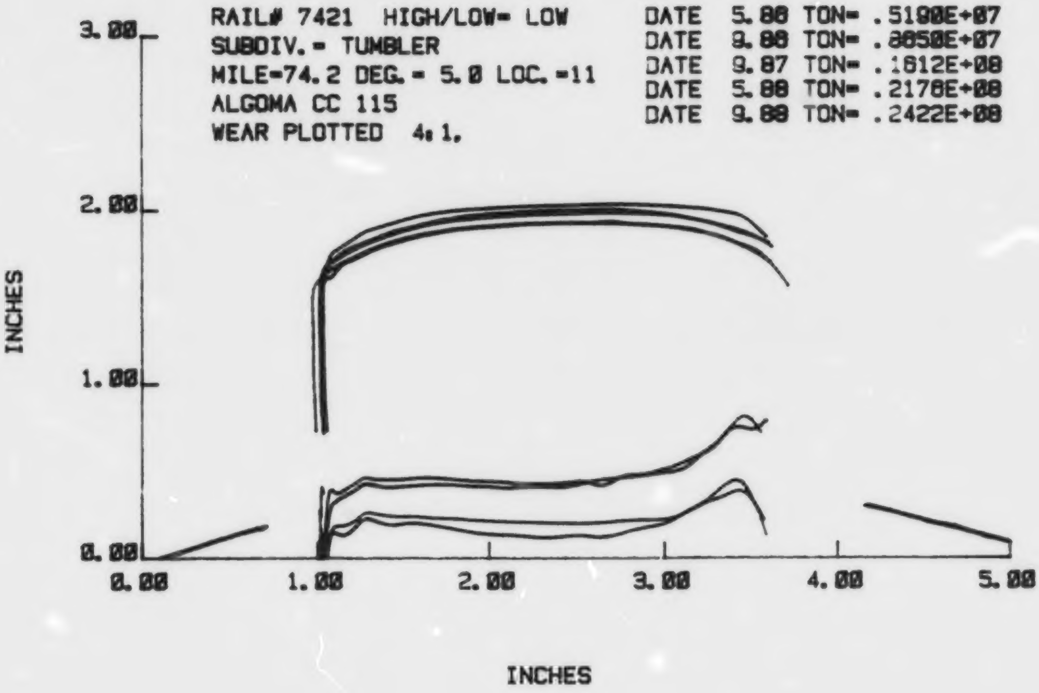

RAIL# 7212 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=72.1 DEG. = 5.0 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .5180E+07
DATE 9.86 TON= .8850E+07
DATE 9.87 TON= .1612E+08
DATE 5.88 TON= .2176E+08
DATE 9.88 TON= .2422E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

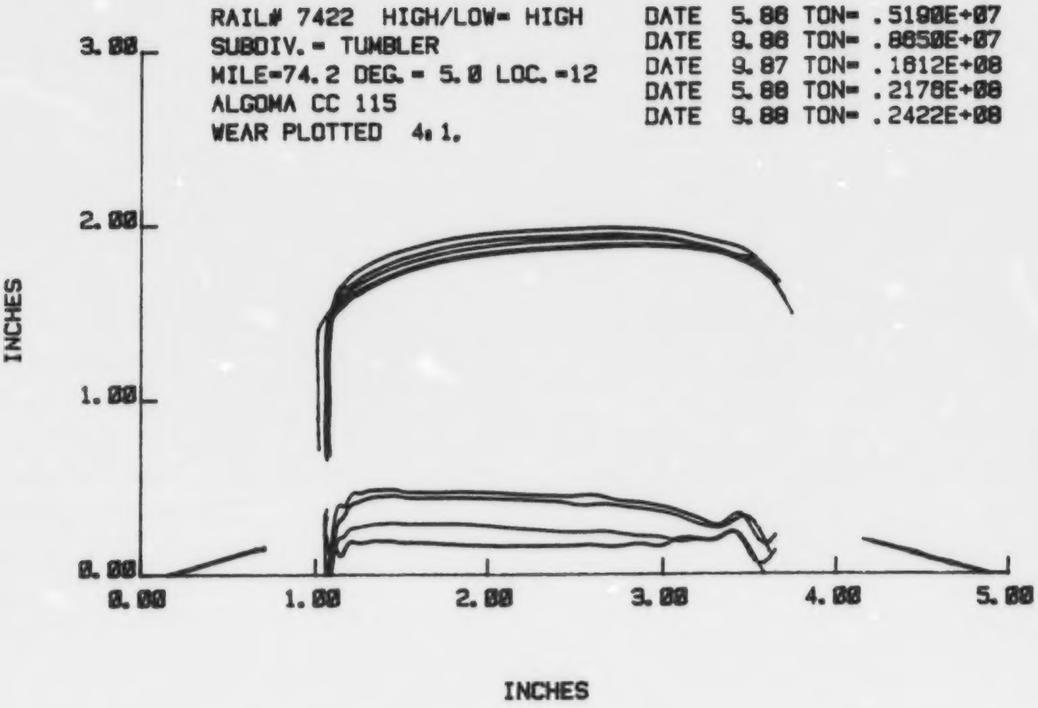

RAIL# 7213 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=72.1 DEG. = 5.0 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.88 TON= .5190E+07
DATE 9.88 TON= .8850E+07
DATE 9.87 TON= .1812E+08
DATE 5.88 TON= .2176E+08
DATE 9.88 TON= .2422E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

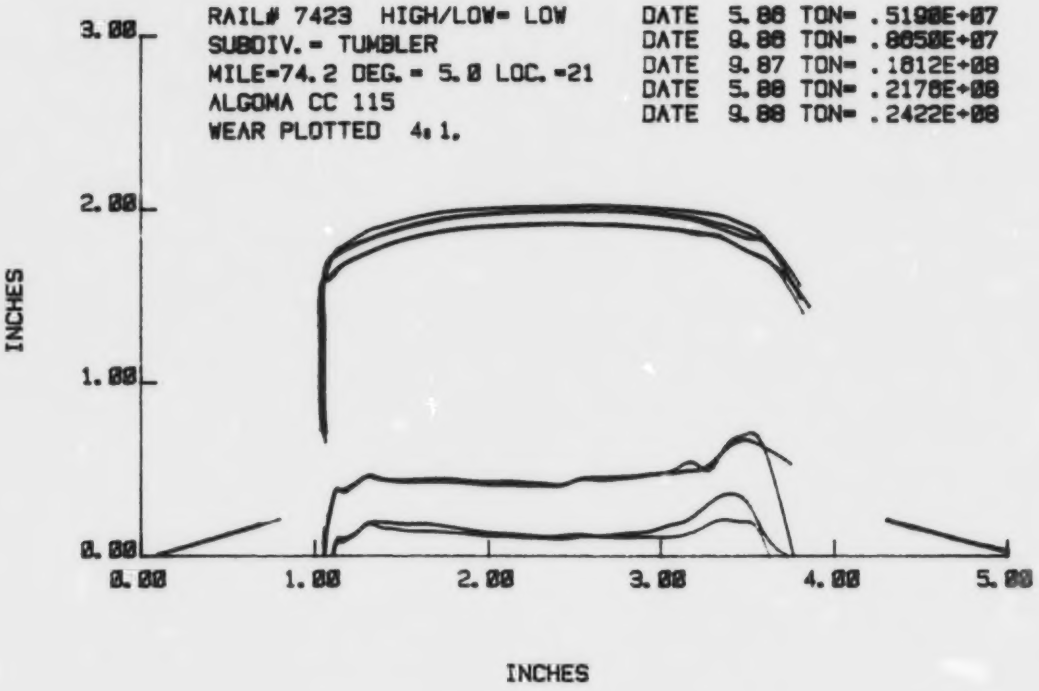

RAIL# 7214 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=72.1 DEG. = 5.0 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.88 TON= .5190E+07
DATE 9.88 TON= .8850E+07
DATE 9.87 TON= .1812E+08
DATE 5.88 TON= .2176E+08
DATE 9.88 TON= .2422E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

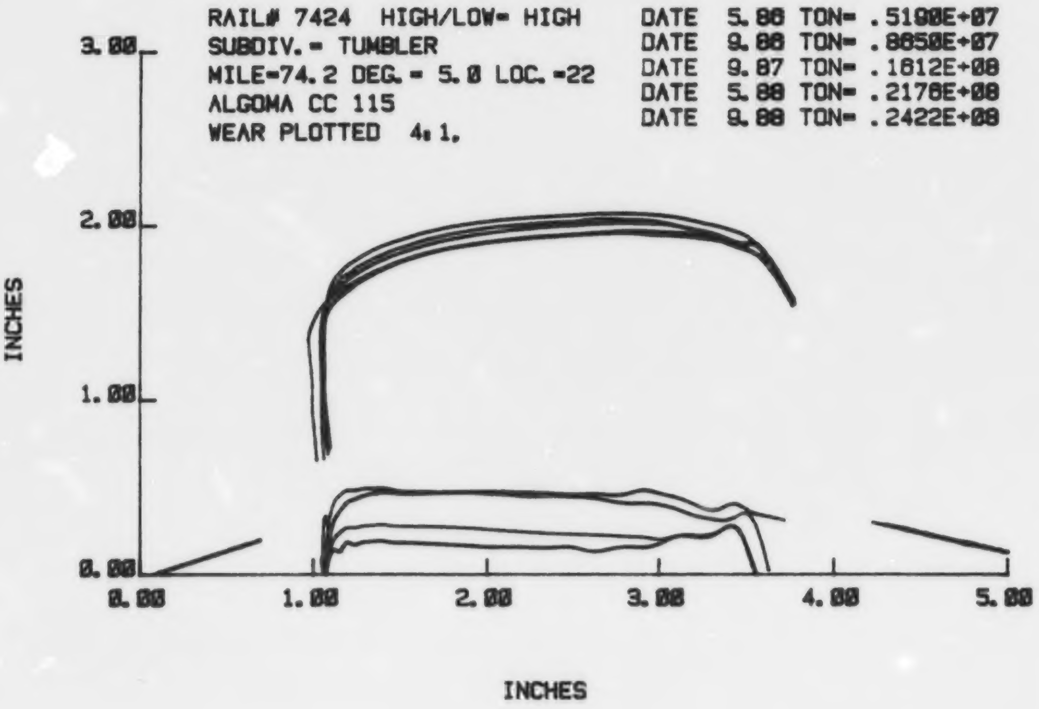

RAIL# 7215 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=72.1 DEG. = 5.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .5190E+07
DATE 9.86 TON= .8850E+07
DATE 9.87 TON= .1812E+08
DATE 5.88 TON= .2176E+08
DATE 9.88 TON= .2422E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

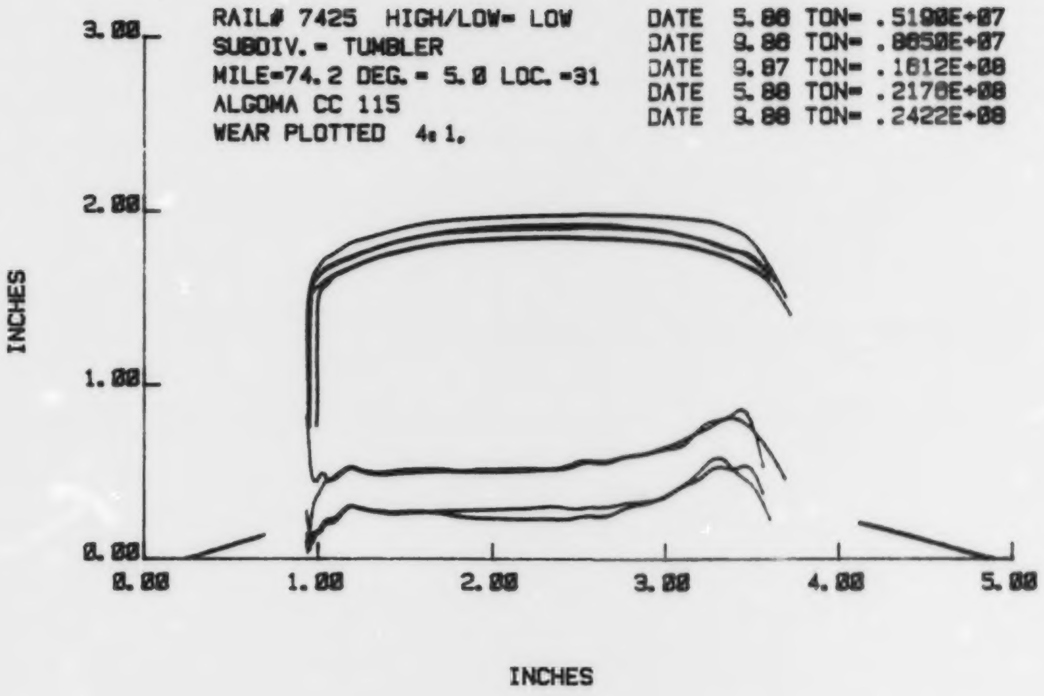

RAIL# 7216 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=72.1 DEG. = 5.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .5190E+07
DATE 9.86 TON= .8850E+07
DATE 9.87 TON= .1812E+08
DATE 5.88 TON= .2176E+08
DATE 9.88 TON= .2422E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

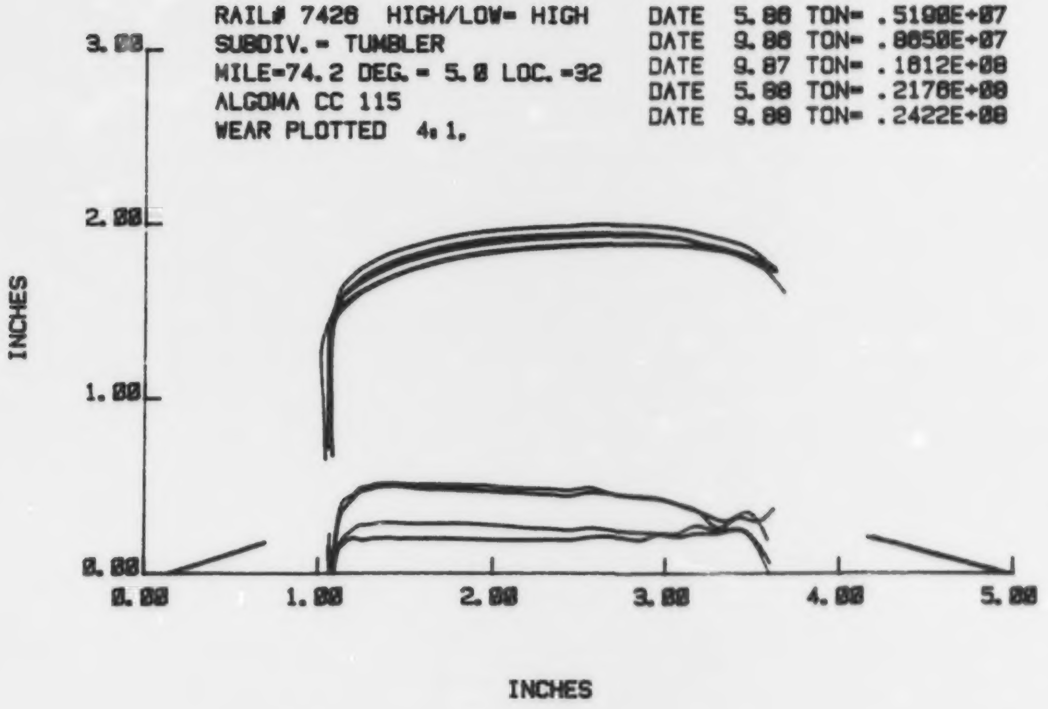

RAIL# 7421 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=74.2 DEG. = 5.0 LOC. =11
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.88 TON= .5190E+07
DATE 8.88 TON= .8850E+07
DATE 9.87 TON= .1812E+08
DATE 5.88 TON= .2178E+08
DATE 9.88 TON= .2422E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

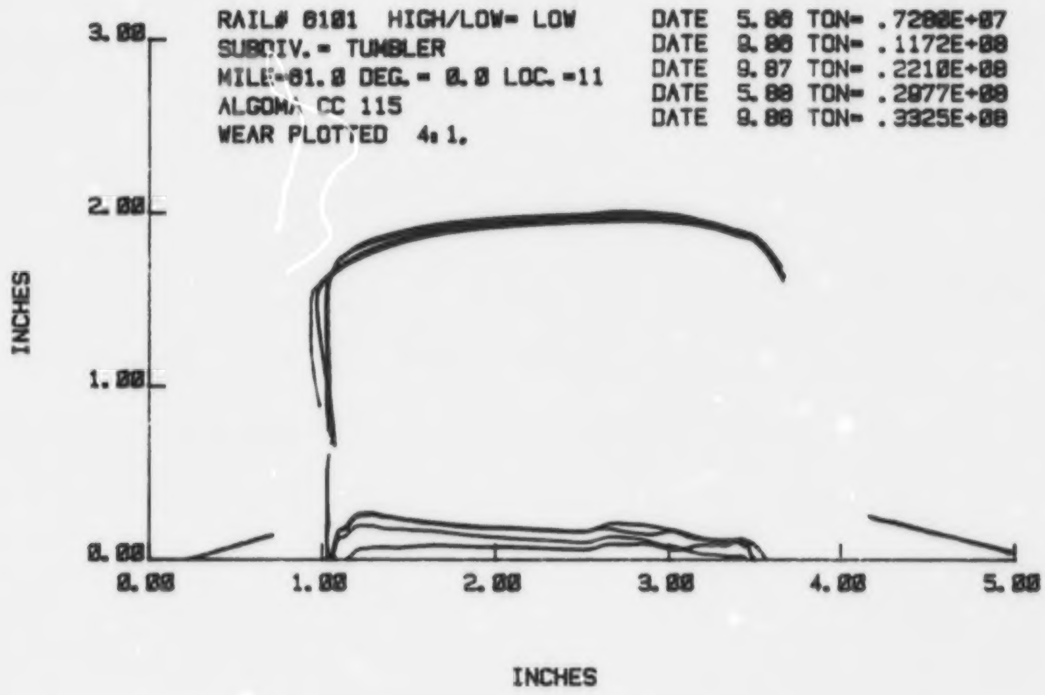

RAIL# 7422 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=74.2 DEG. = 5.0 LOC. =12
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.88 TON= .5190E+07
DATE 8.88 TON= .8850E+07
DATE 9.87 TON= .1812E+08
DATE 5.88 TON= .2178E+08
DATE 9.88 TON= .2422E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

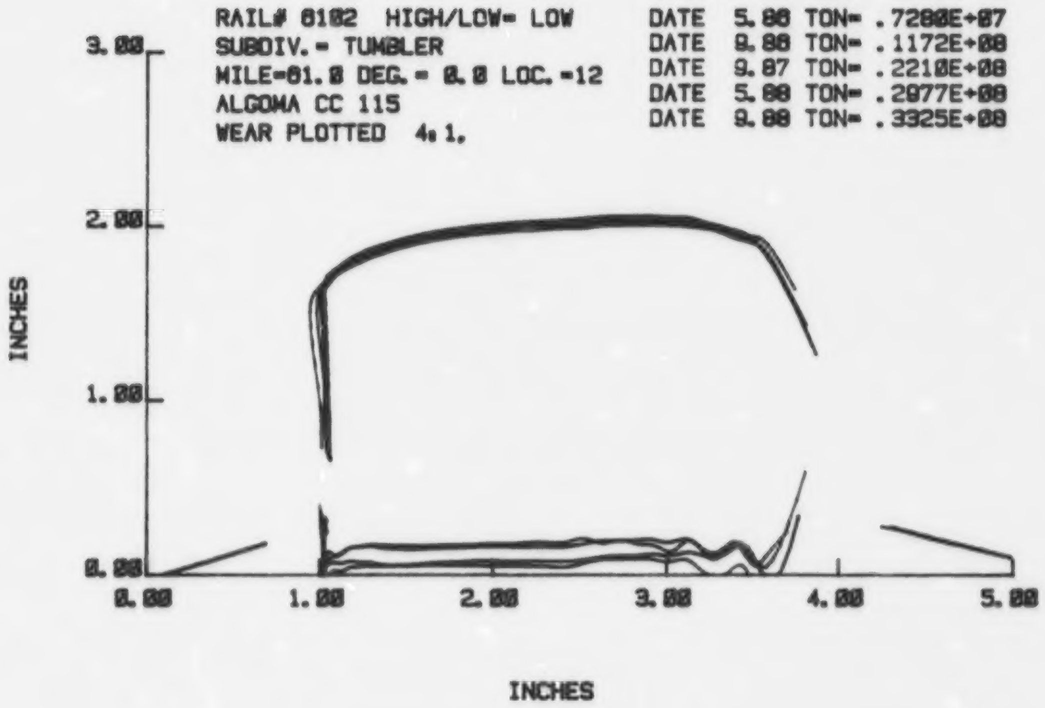

RAIL# 7423 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=74.2 DEG. = 5.0 LOC. =21
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .5190E+07
DATE 9.86 TON= .8650E+07
DATE 9.87 TON= .1812E+08
DATE 5.88 TON= .2178E+08
DATE 9.88 TON= .2422E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES


RAIL# 7424 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=74.2 DEG. = 5.0 LOC. =22
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .5190E+07
DATE 9.86 TON= .8650E+07
DATE 9.87 TON= .1812E+08
DATE 5.88 TON= .2178E+08
DATE 9.88 TON= .2422E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES


RAIL# 7425 HIGH/LOW= LOW
SUBDIV. = TUMBLER
MILE=74.2 DEG. = 5.0 LOC. =31
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .5190E+07
DATE 9.86 TON= .8650E+07
DATE 9.87 TON= .1812E+08
DATE 5.88 TON= .2176E+08
DATE 9.88 TON= .2422E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES


RAIL# 7426 HIGH/LOW= HIGH
SUBDIV. = TUMBLER
MILE=74.2 DEG. = 5.0 LOC. =32
ALGOMA CC 115
WEAR PLOTTED 4: 1.
DATE 5.86 TON= .5190E+07
DATE 9.86 TON= .8650E+07
DATE 9.87 TON= .1812E+08
DATE 5.88 TON= .2176E+08
DATE 9.88 TON= .2422E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

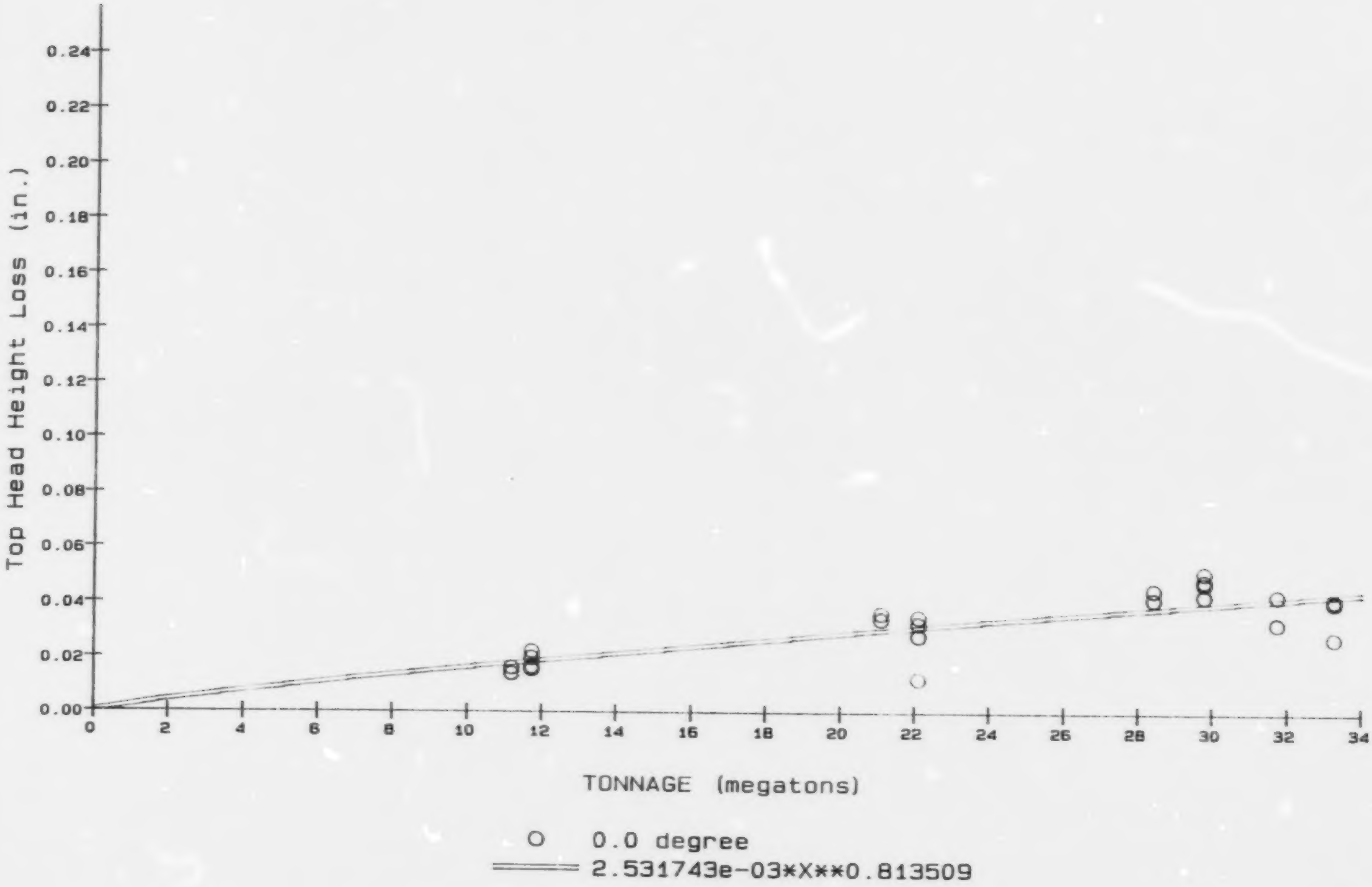

RAIL# 0101 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=01.0 DEG.= 0.0 LOC.=11
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2877E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES


RAIL# 0102 HIGH/LOW= LOW
SUBDIV.= TUMBLER
MILE=01.0 DEG.= 0.0 LOC.=12
ALGOMA CC 115
WEAR PLOTTED 4:1.
DATE 5.86 TON= .7280E+07
DATE 9.86 TON= .1172E+08
DATE 9.87 TON= .2210E+08
DATE 5.88 TON= .2877E+08
DATE 9.88 TON= .3325E+08
3.00
2.00
1.00
0.00
INCHES
0.00
1.00
2.00
3.00
4.00
5.00
INCHES

TUMBAREA110

13-DEC-88 8: 15 Page 1

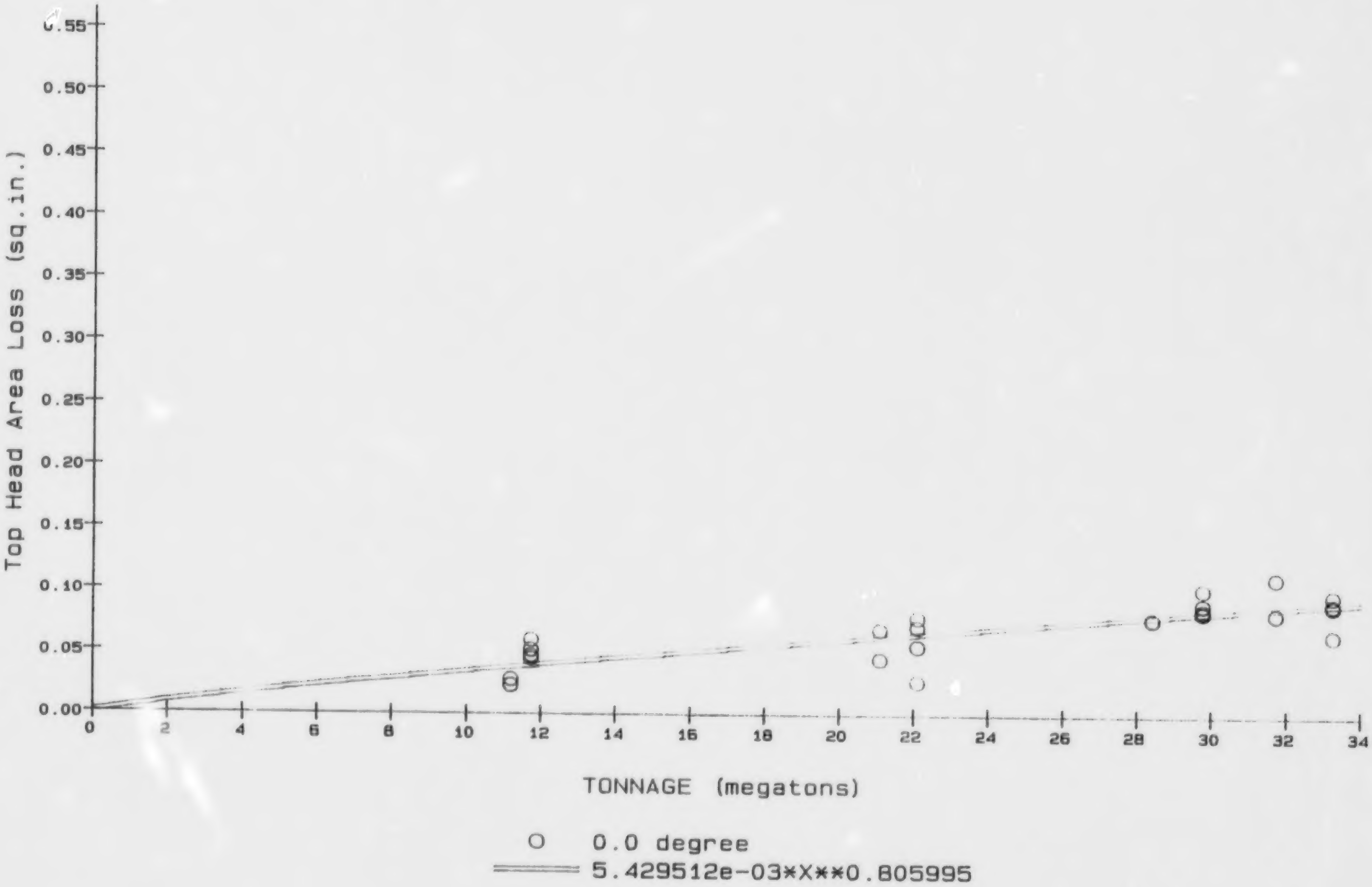
TOP HEAD HEIGHT LOSS vs TONNAGE . LOW RAIL - 0.0 DEG CURVATURE



TUMBAREA120

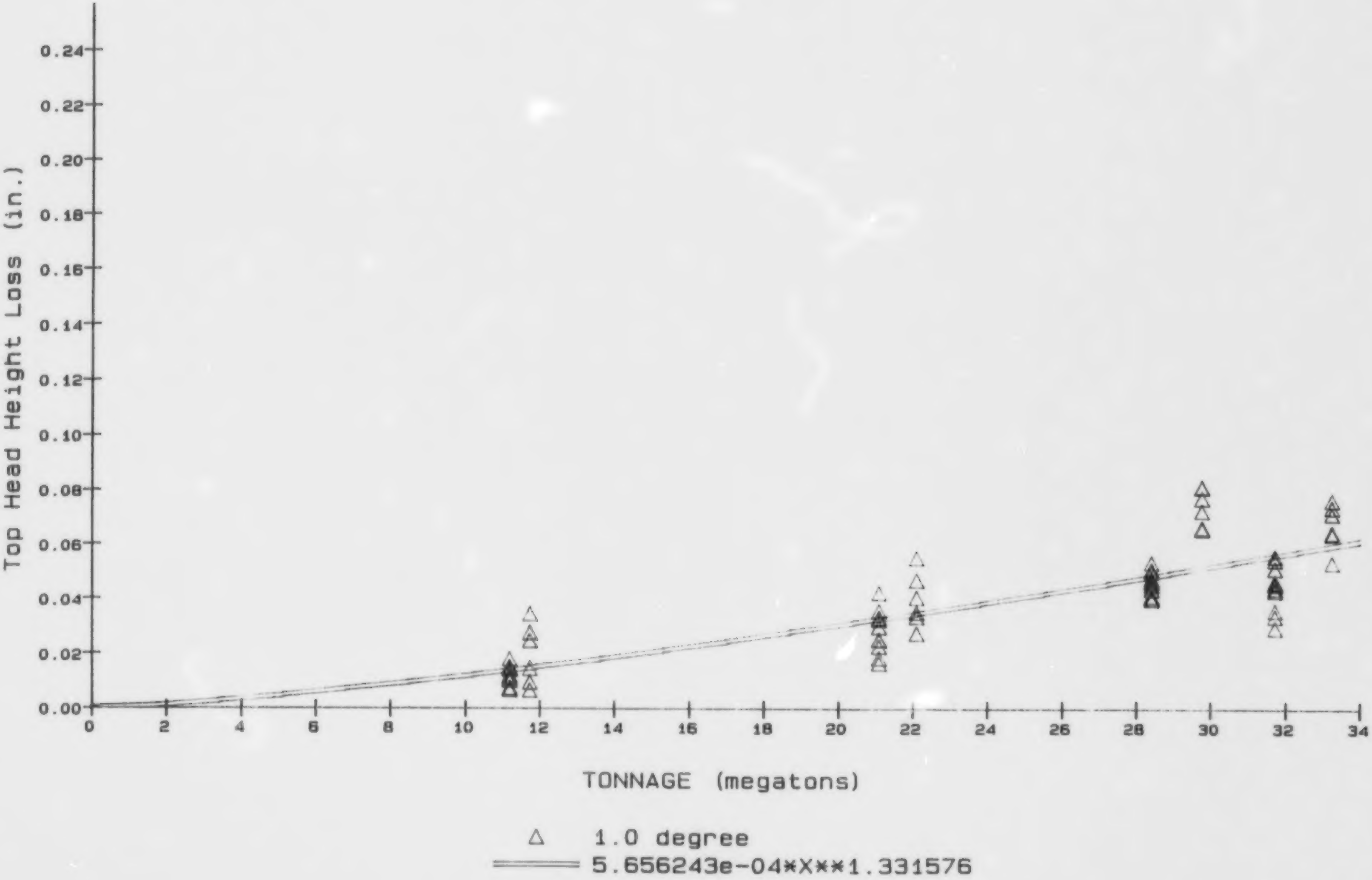
13-DEC-88 8:18 Page 1

TOP HEAD AREA LOSS vs TONNAGE . LOW RAIL - 0.0 DEG CURVATURE



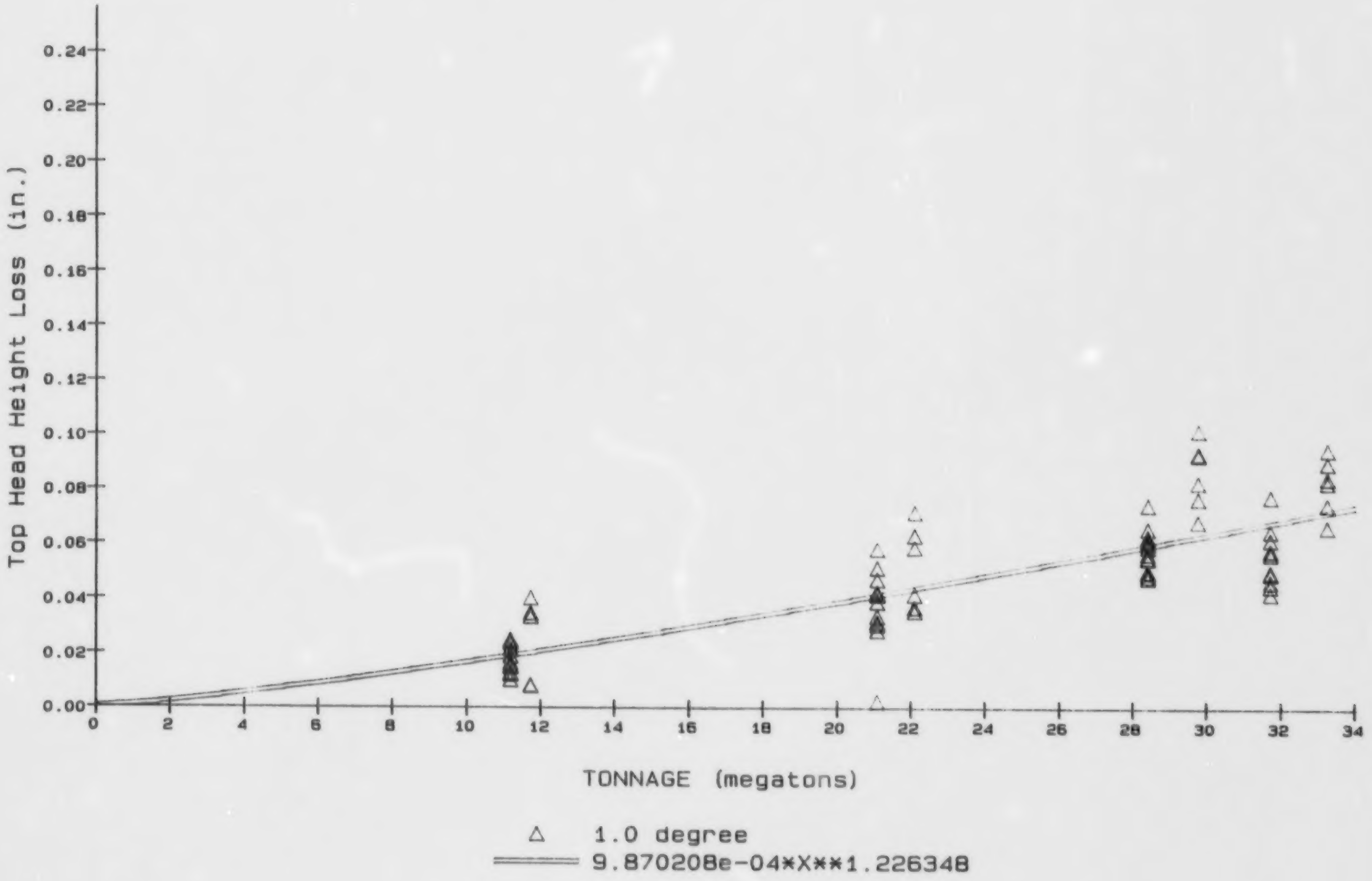
TUMBAREA210 13-DEC-88 8: 21 Page 1

TOP HEAD HEIGHT LOSS vs TONNAGE . LOW RAIL - 1.0 DEG CURVATURE



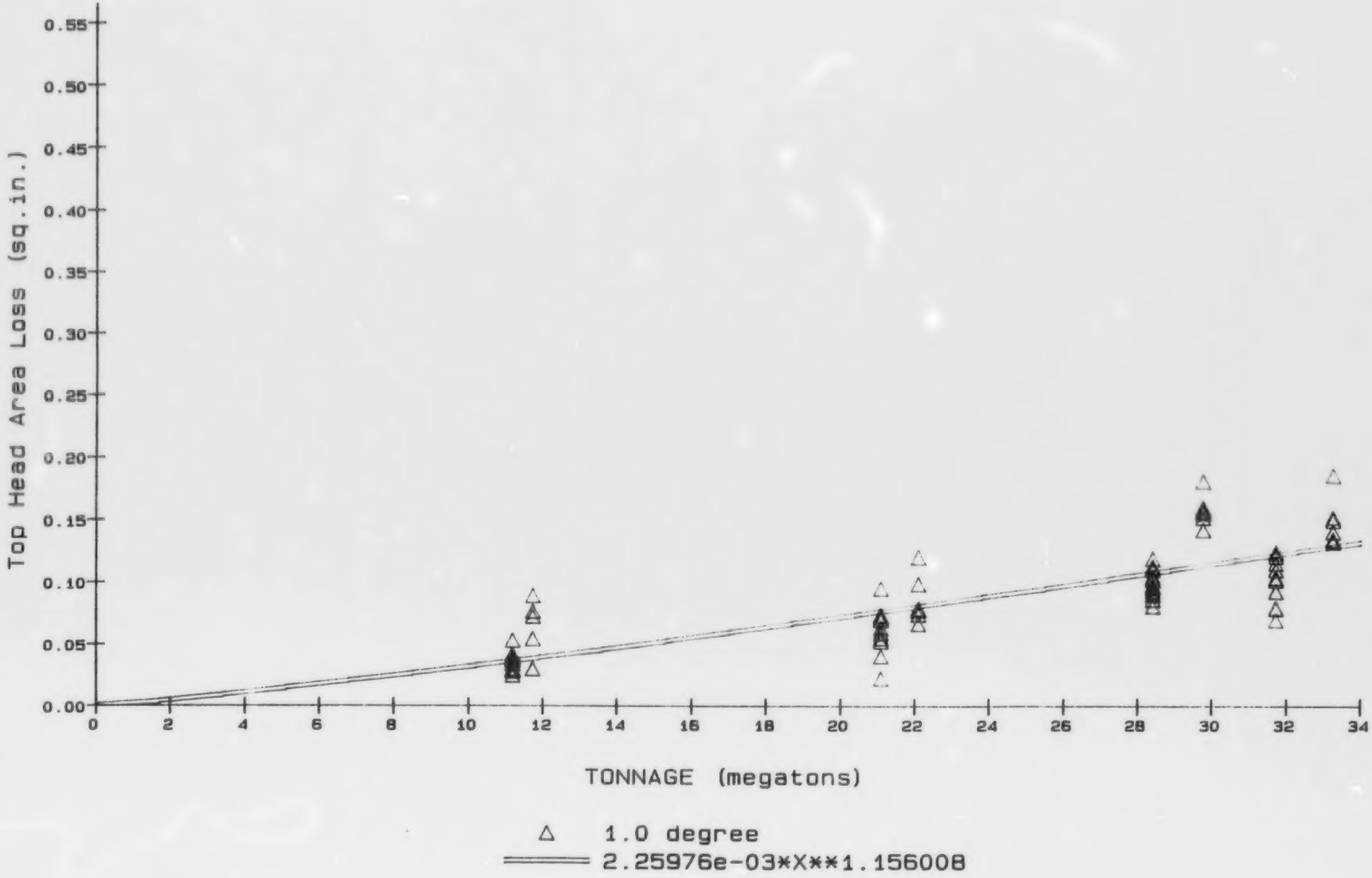
TUMBAREA211 13-DEC-88 8: 24 Page 1

TOP HEAD HEIGHT LOSS vs TONNAGE . HIGH RAIL - 1.0 DEG CURVATURE



TUMBAREA220 13-DEC-88 8: 28 Page 1

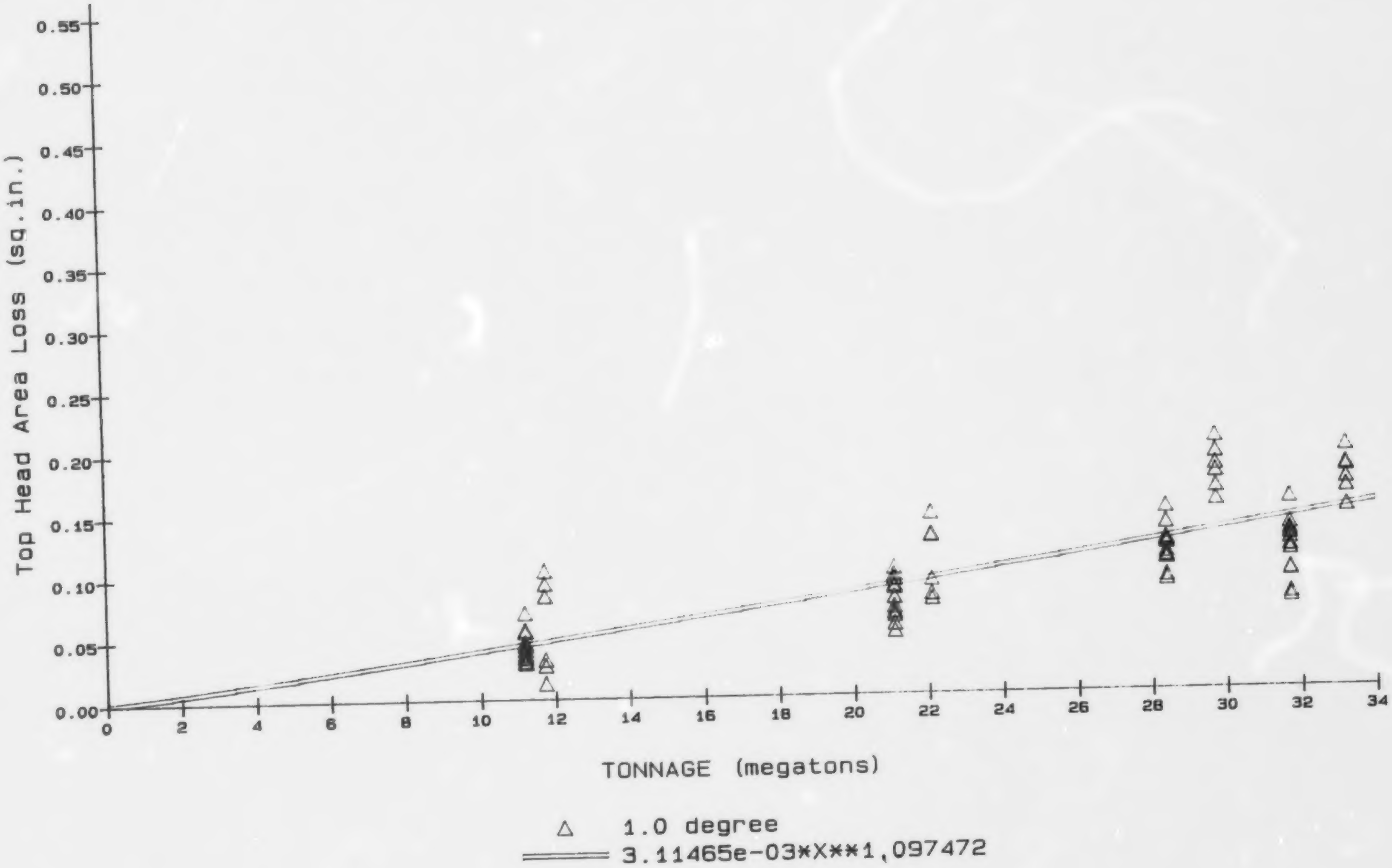
TOP HEAD AREA LOSS vs TONNAGE . LOW RAIL - 1.0 DEG CURVATURE



TUMBAREA221

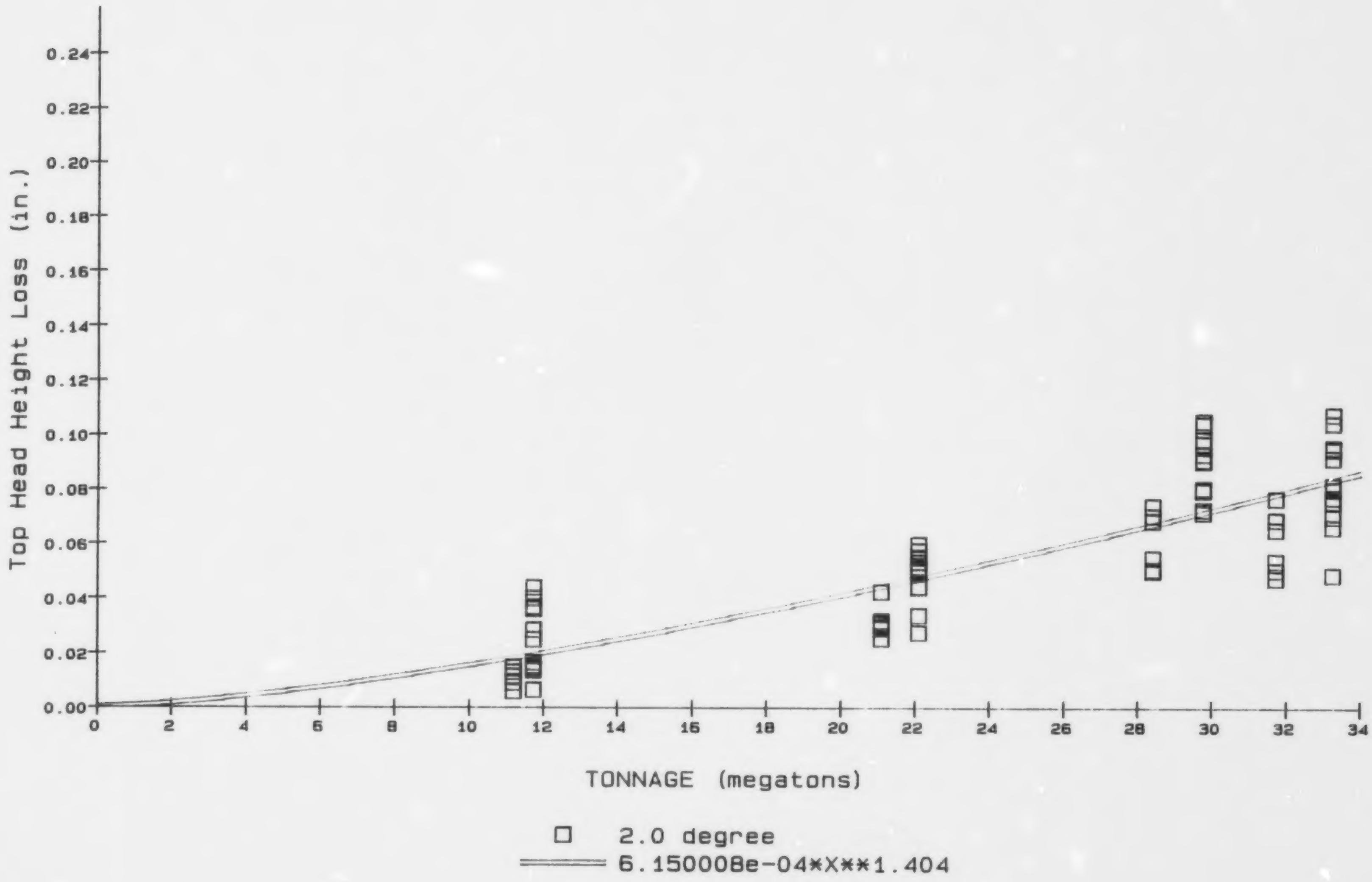
13-DEC-88 8: 35 Page 1

TOP HEAD AREA LOSS vs TONNAGE , HIGH RAIL - 1.0 DEG CURVATURE

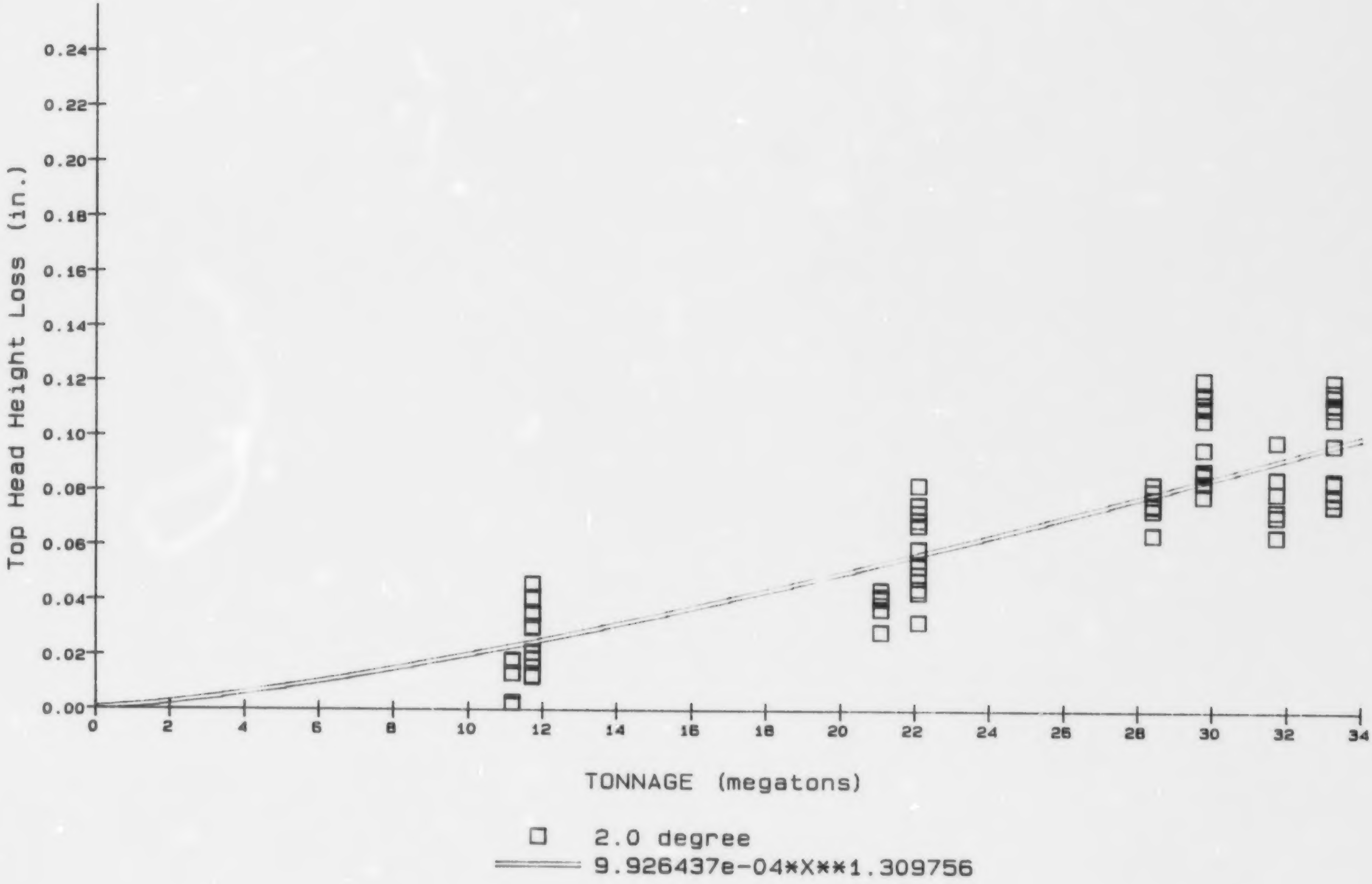


TUMBAREA310 13-DEC-88 8: 38 Page 1

TOP HEAD HEIGHT LOSS vs TONNAGE . LOW RAIL - 2.0 DEG CURVATURE



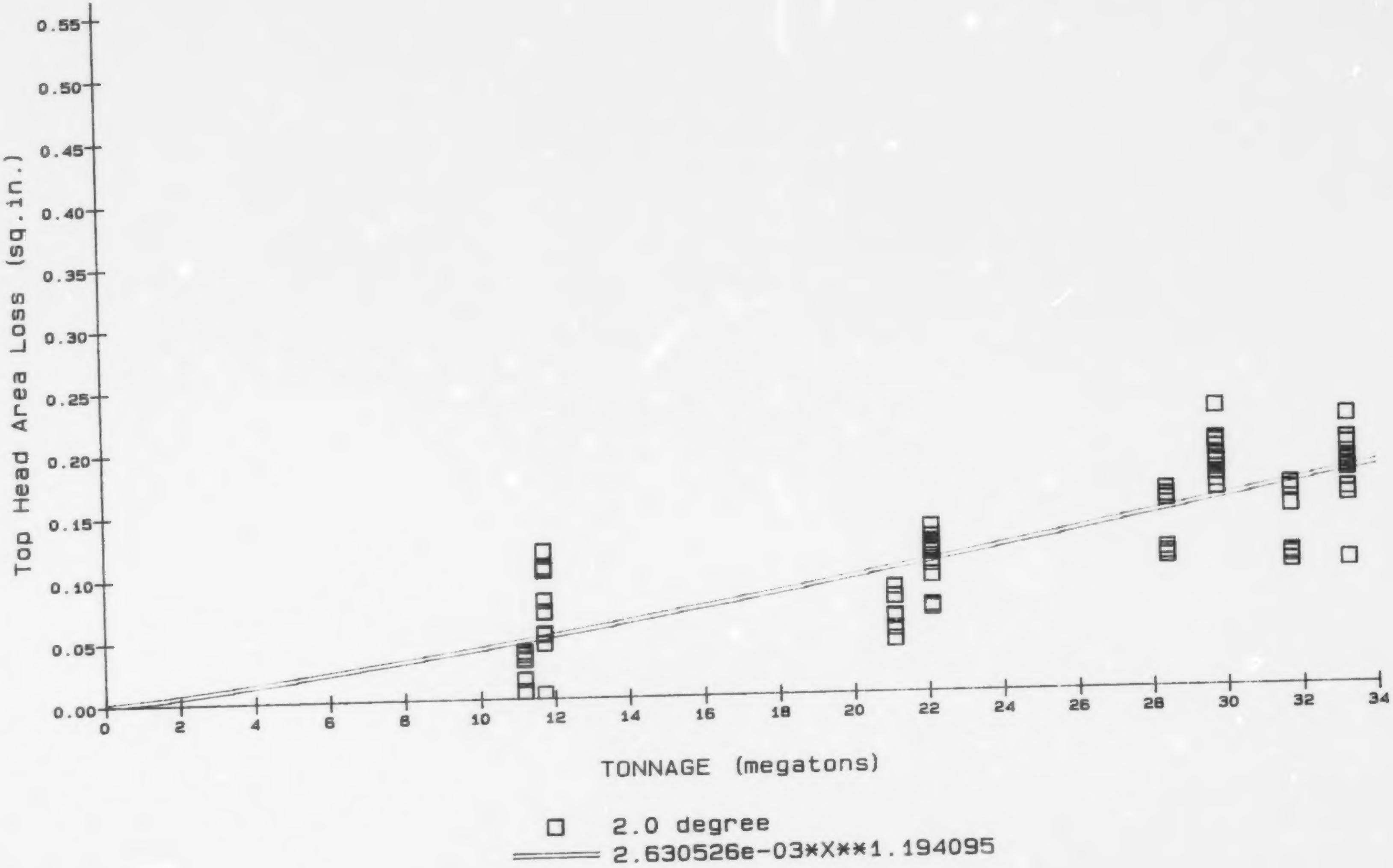
TOP HEAD HEIGHT LOSS vs TONNAGE . HIGH RAIL - 2.0 DEG CURVATURE



TUMBAREA320

13-DEC-88 8: 45 Page 1

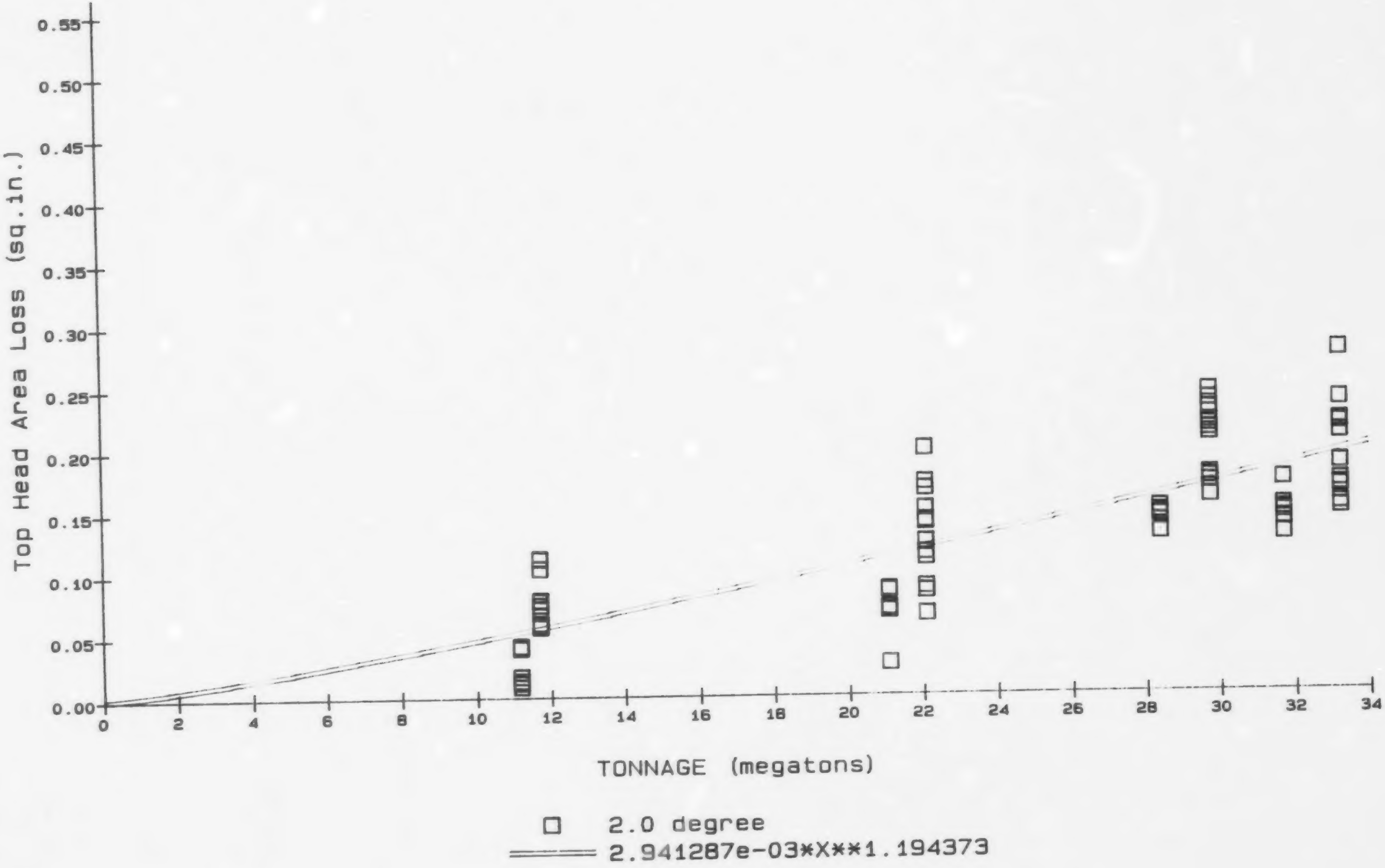
TOP HEAD AREA LOSS vs TONNAGE . LOW RAIL - 2.0 DEG CURVATURE



TUMBAREA321

13-DEC-88 8: 49 Page 1

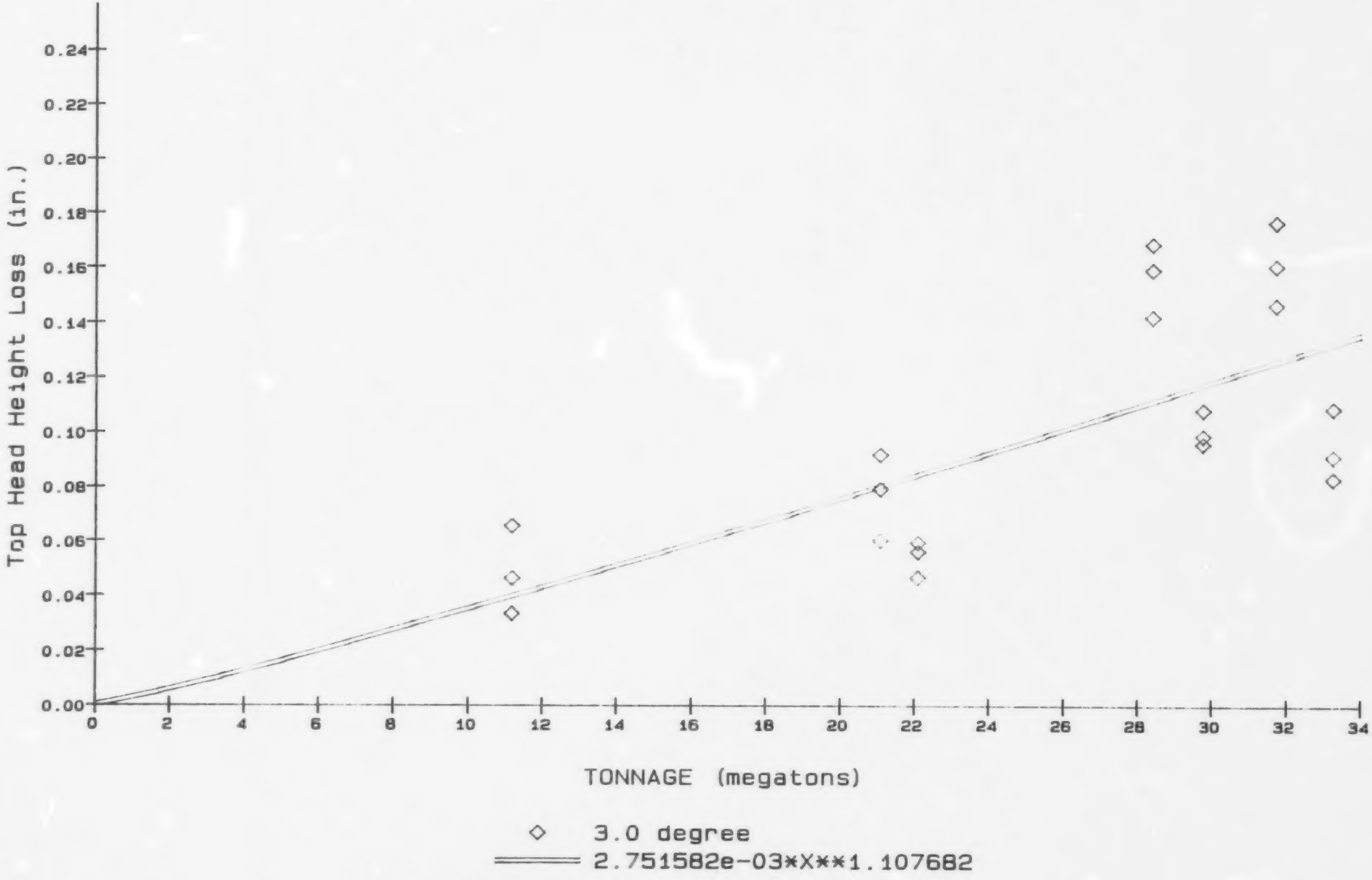
TOP HEAD AREA LOSS vs TONNAGE . HIGH RAIL - 2.0 DEG CURVATURE



TUMBAREA410

13-DEC-88 8: 53 Page 1

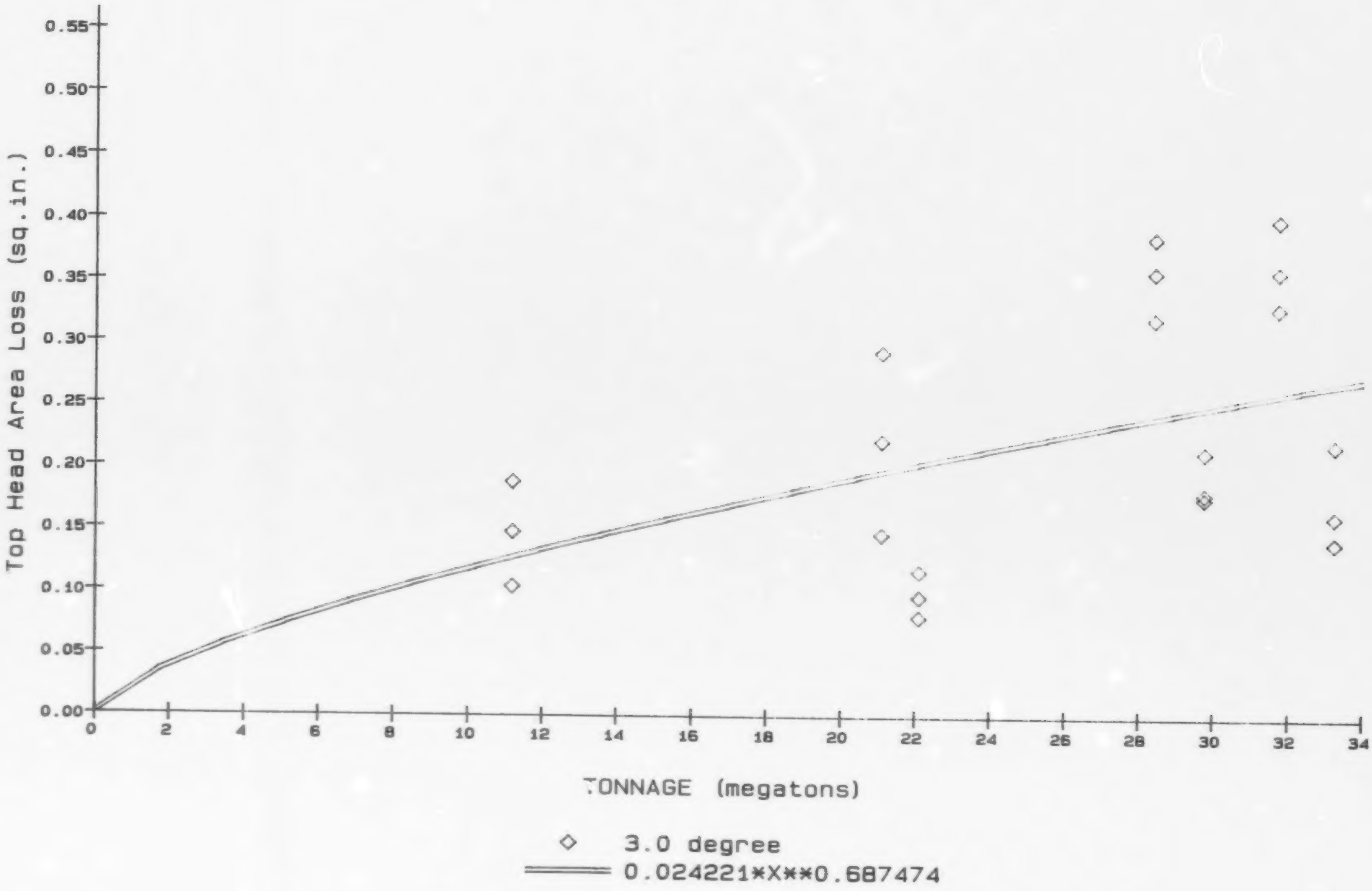
TOP HEAD HEIGHT LOSS vs TONNAGE , LOW RAIL - 3.0 DEG CURVATURE



TUMBAREA420

13-DEC-88 8:59 Page 1

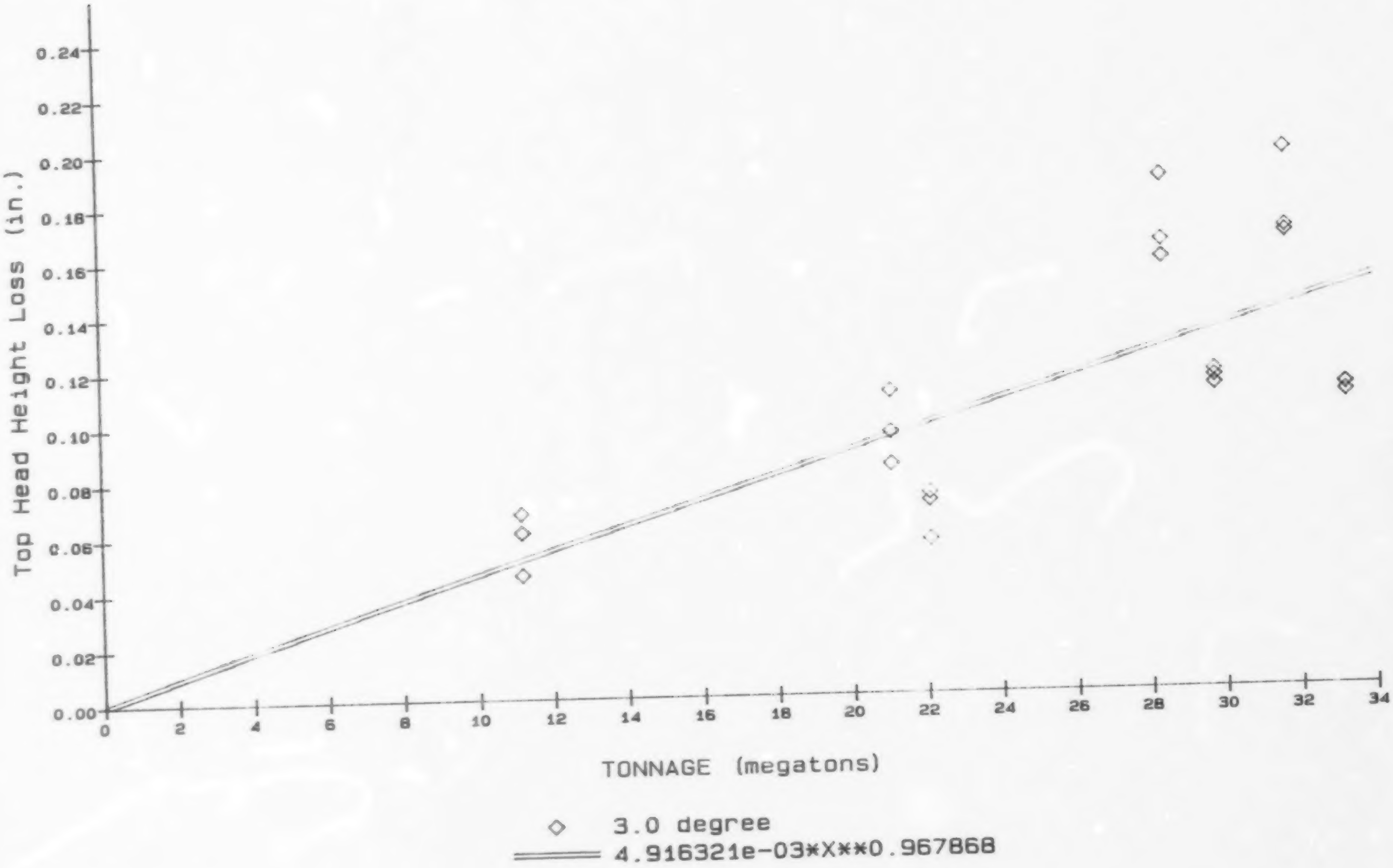
TOP HEAD AREA LOSS vs TONNAGE . LOW RAIL - 3.0 DEG CURVATURE



TUMBAREA411

13-DEC-88 8: 56 Page 1

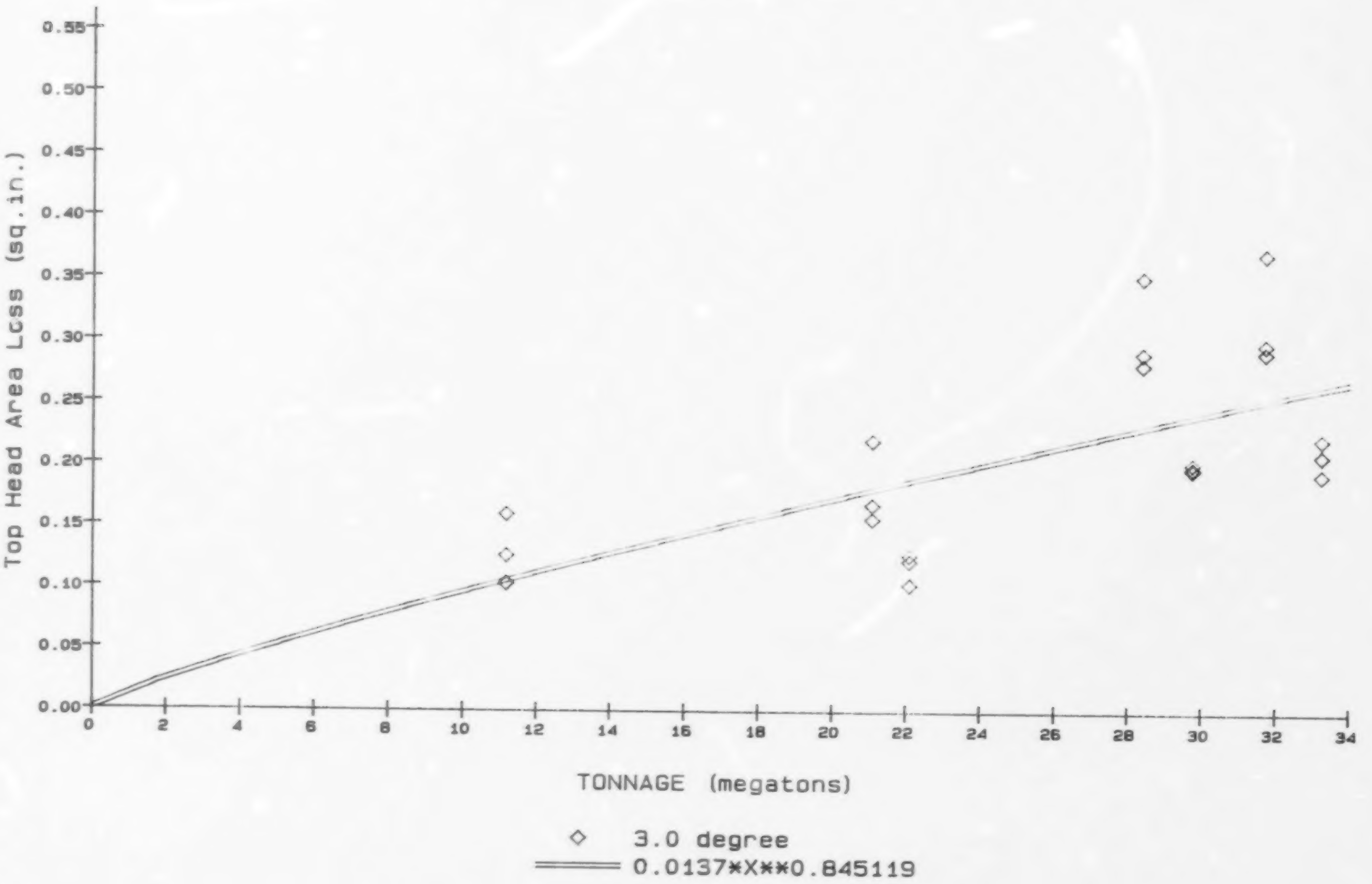
TOP HEAD HEIGHT LOSS vs TONNAGE . HIGH RAIL - 3.0 DEG CURVATURE



TUMBAREA421

13-DEC-88 9: 02 Page 1

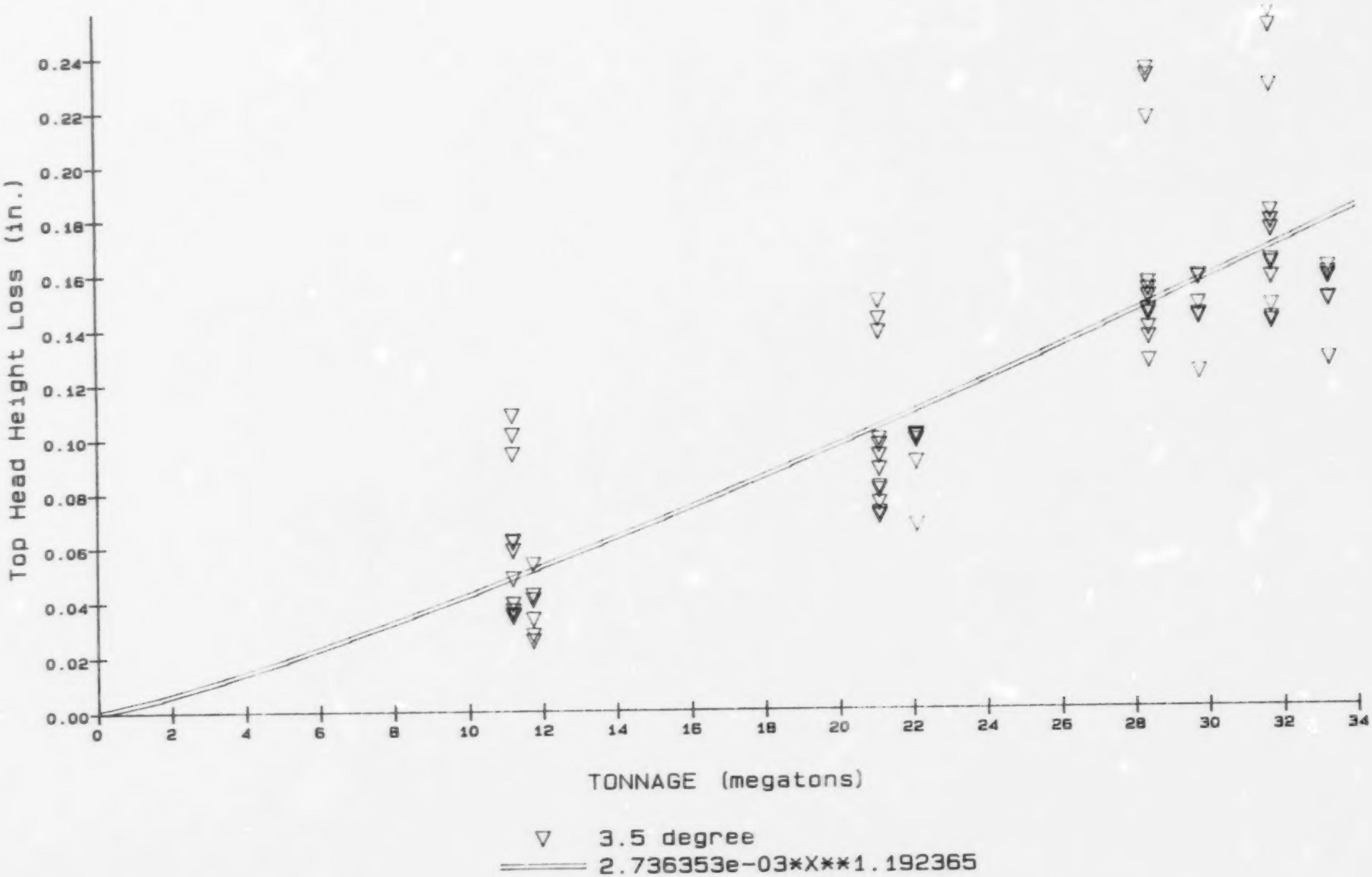
TOP HEAD AREA LOSS vs TONNAGE , HIGH RAIL - 3.0 DEG CURVATURE



TUMBAREA510

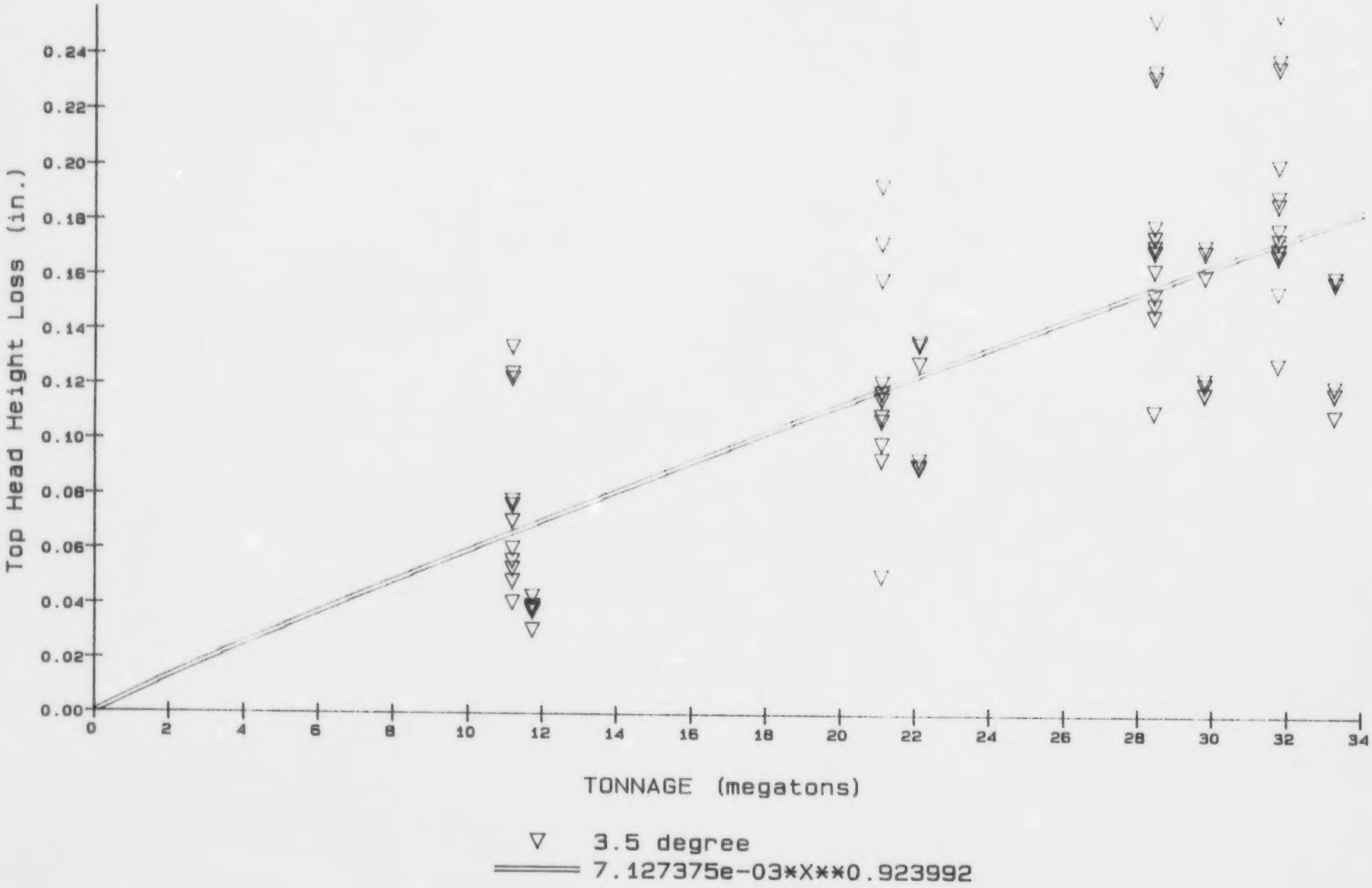
13-DEC-88 9: 05 Page 1

TOP HEAD HEIGHT LOSS vs TONNAGE . LOW RAIL - 3.5 DEG CURVATURE



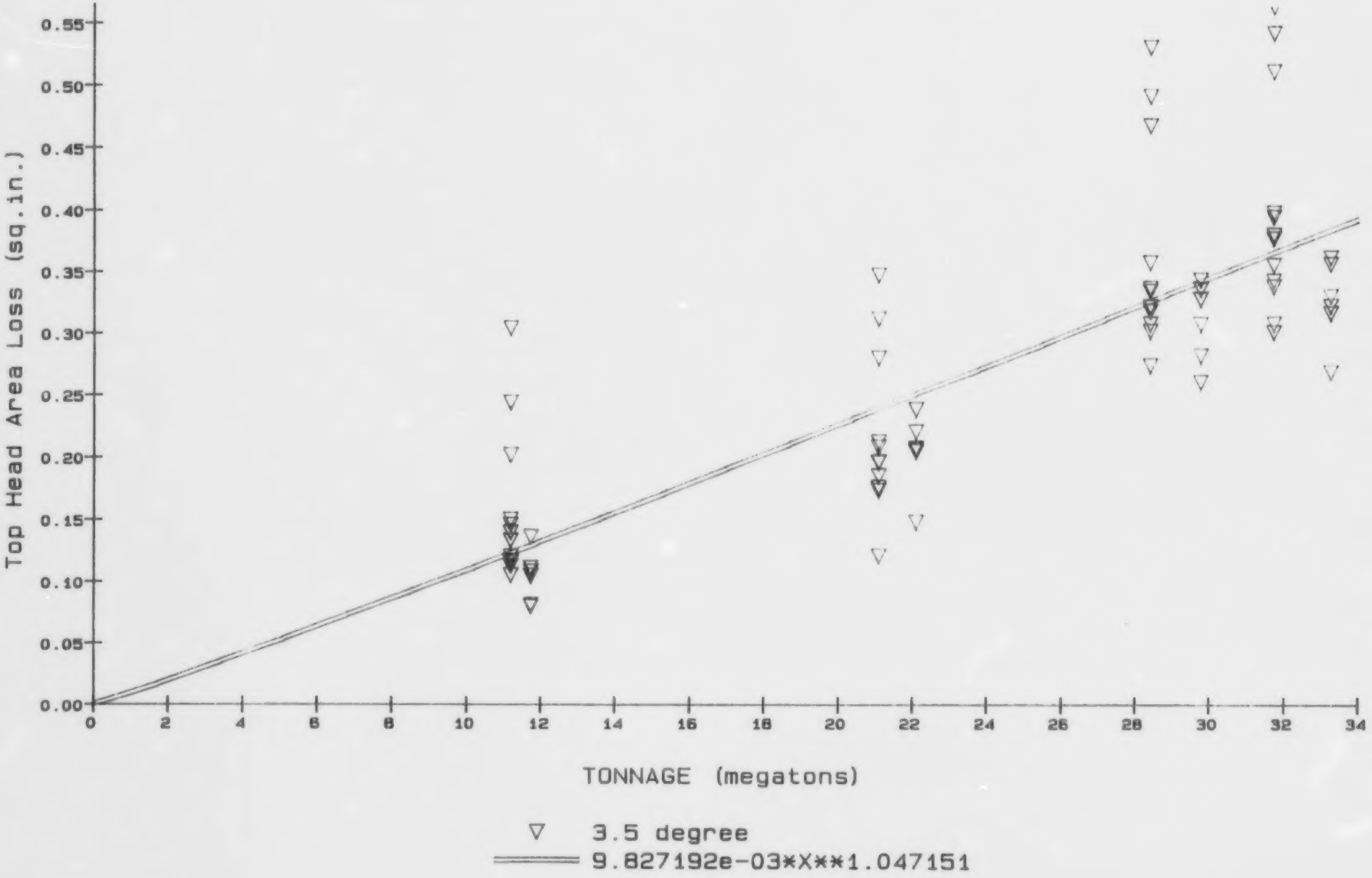
TUMBAREA511 13-DEC-88 9: 08 Page 1

TOP HEAD HEIGHT LOSS vs TONNAGE , HIGH RAIL - 3.5 DEG CURVATURE



TUMBAREA520 13-DEC-88 9: 12 Page 1

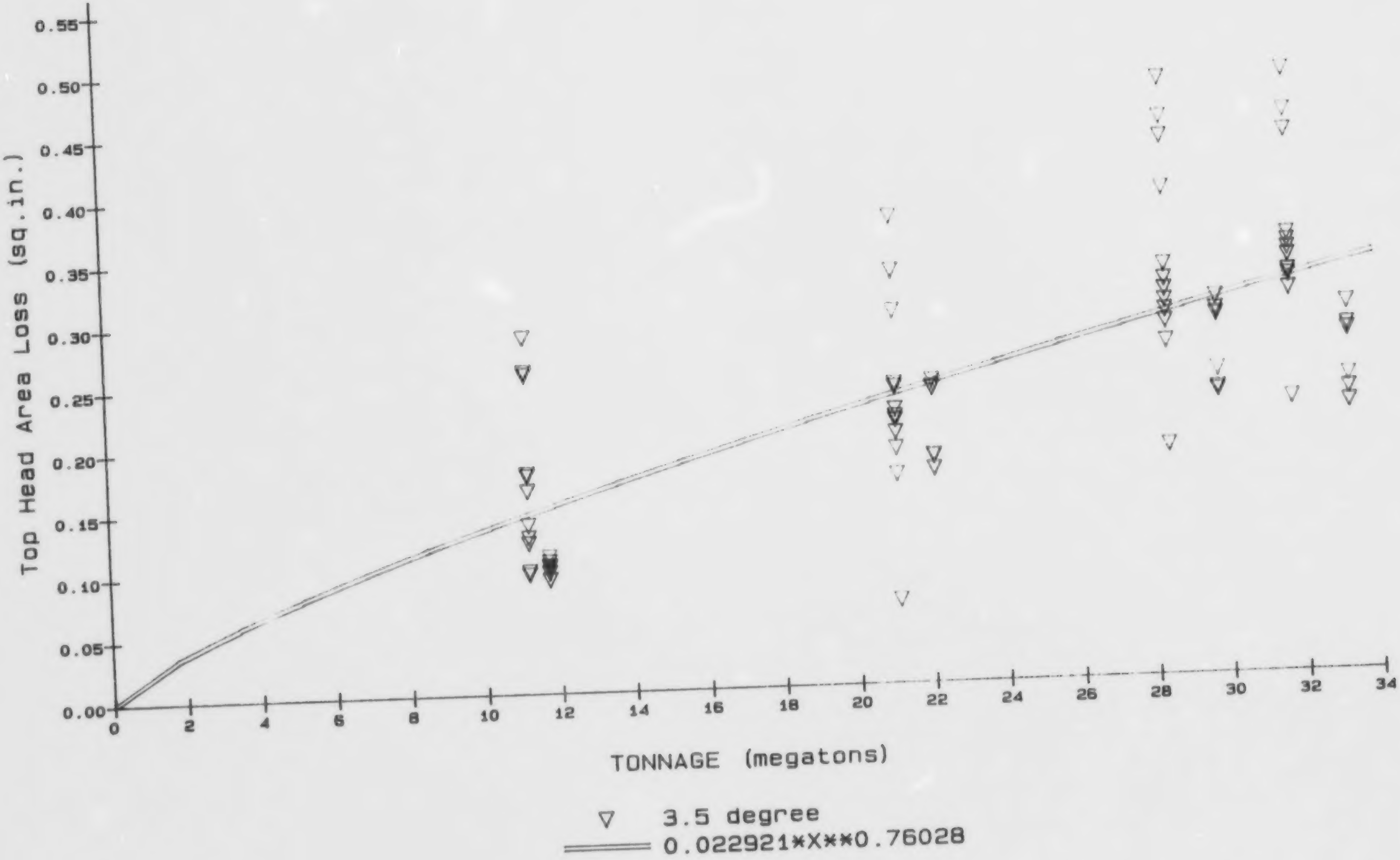
TOP HEAD AREA LOSS vs TONNAGE , LOW RAIL - 3.5 DEG CURVATURE



13-DEC-88 9: 15 Page 1

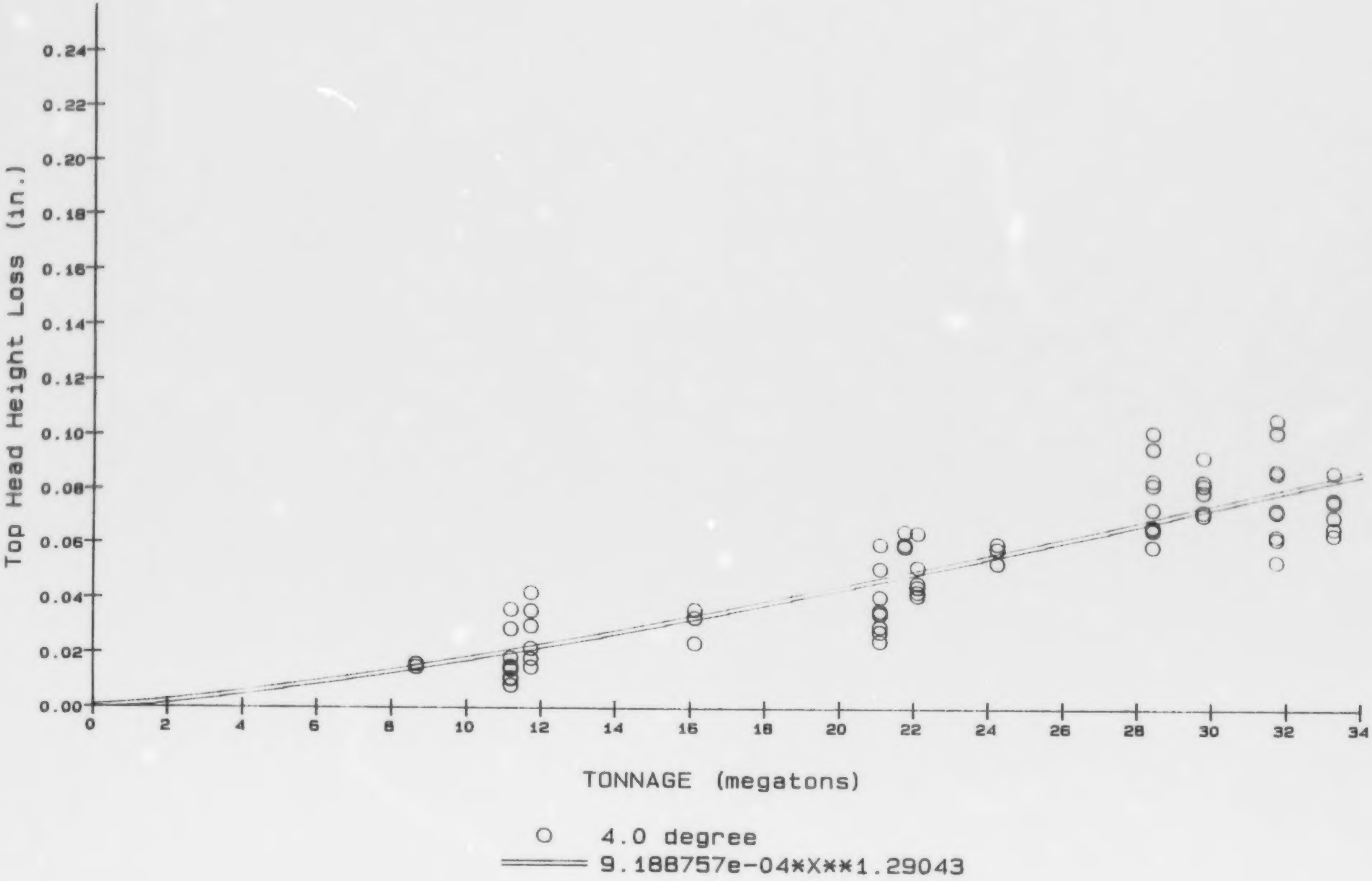
TUMBAREA521

TOP HEAD AREA LOSS vs TONNAGE . HIGH RAIL - 3.5 DEG CURVATURE



TUMBAREA610 13-DEC-88 9: 18 Page 1

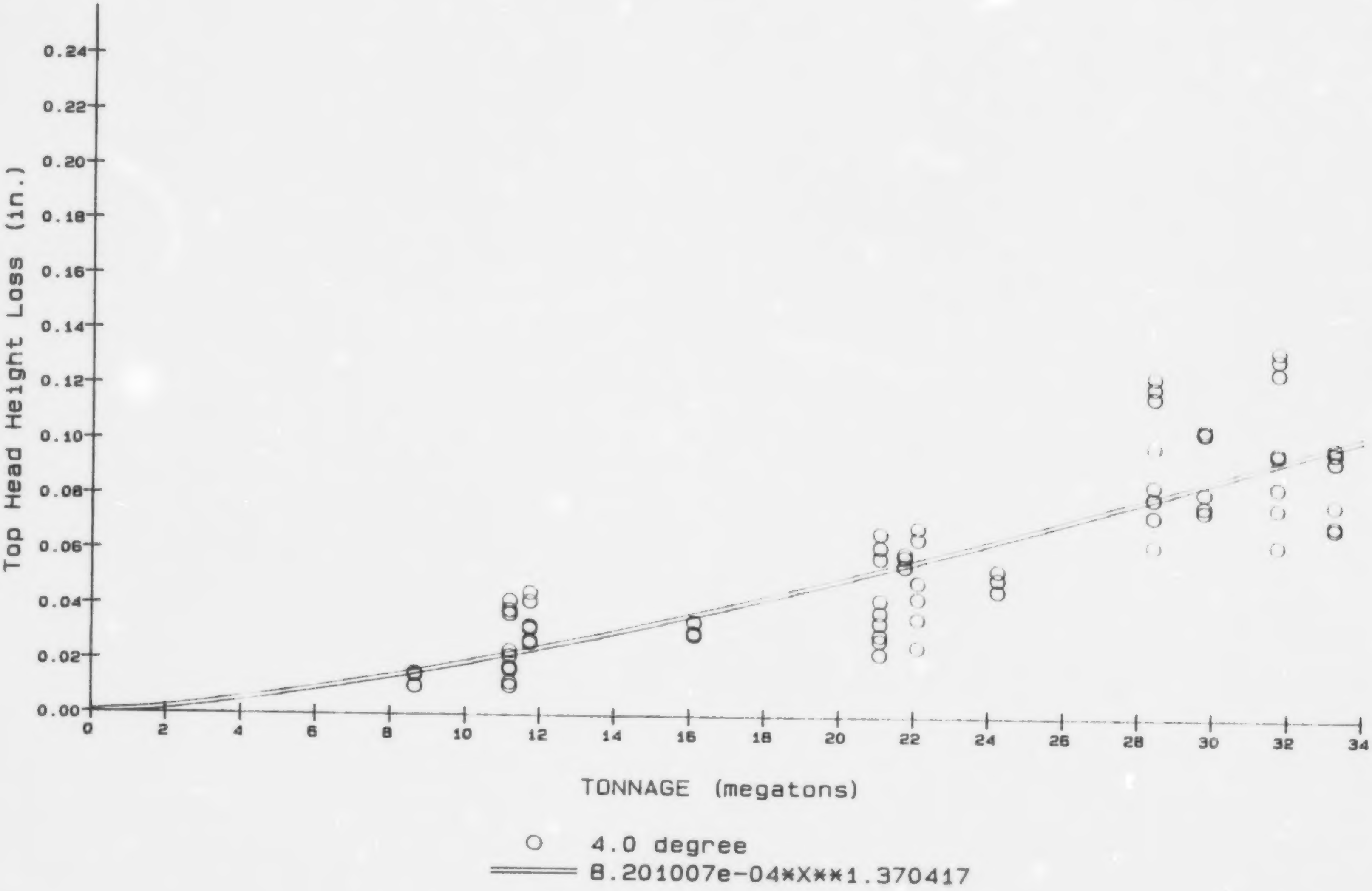
TOP HEAD HEIGHT LOSS vs TONNAGE , LOW RAIL - 4.0 DEG CURVATURE



TUMBAREA611

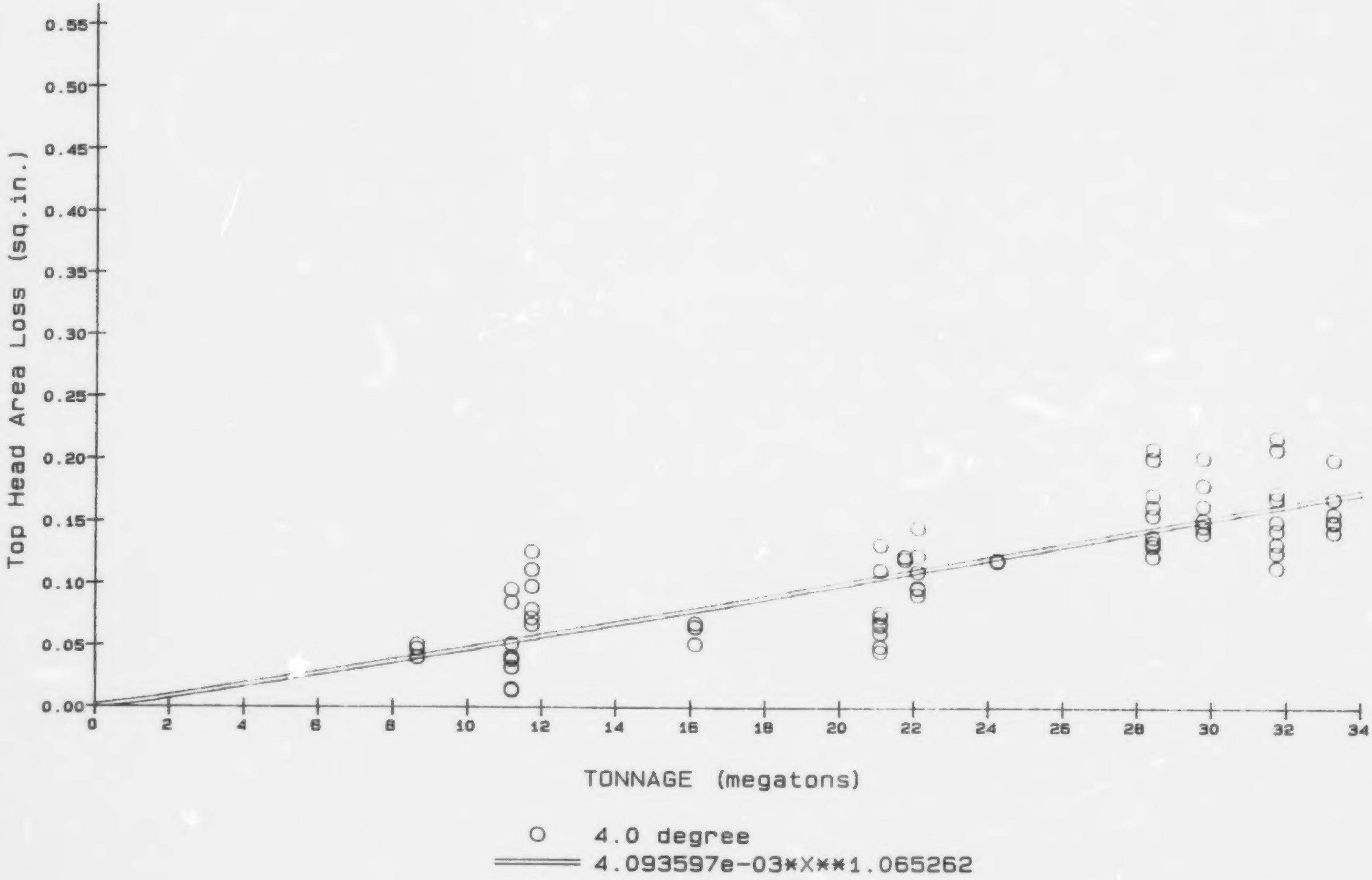
13-DEC-88 9: 23 Page 1

TOP HEAD HEIGHT LOSS vs TONNAGE . HIGH RAIL - 4.0 DEG CURVATURE



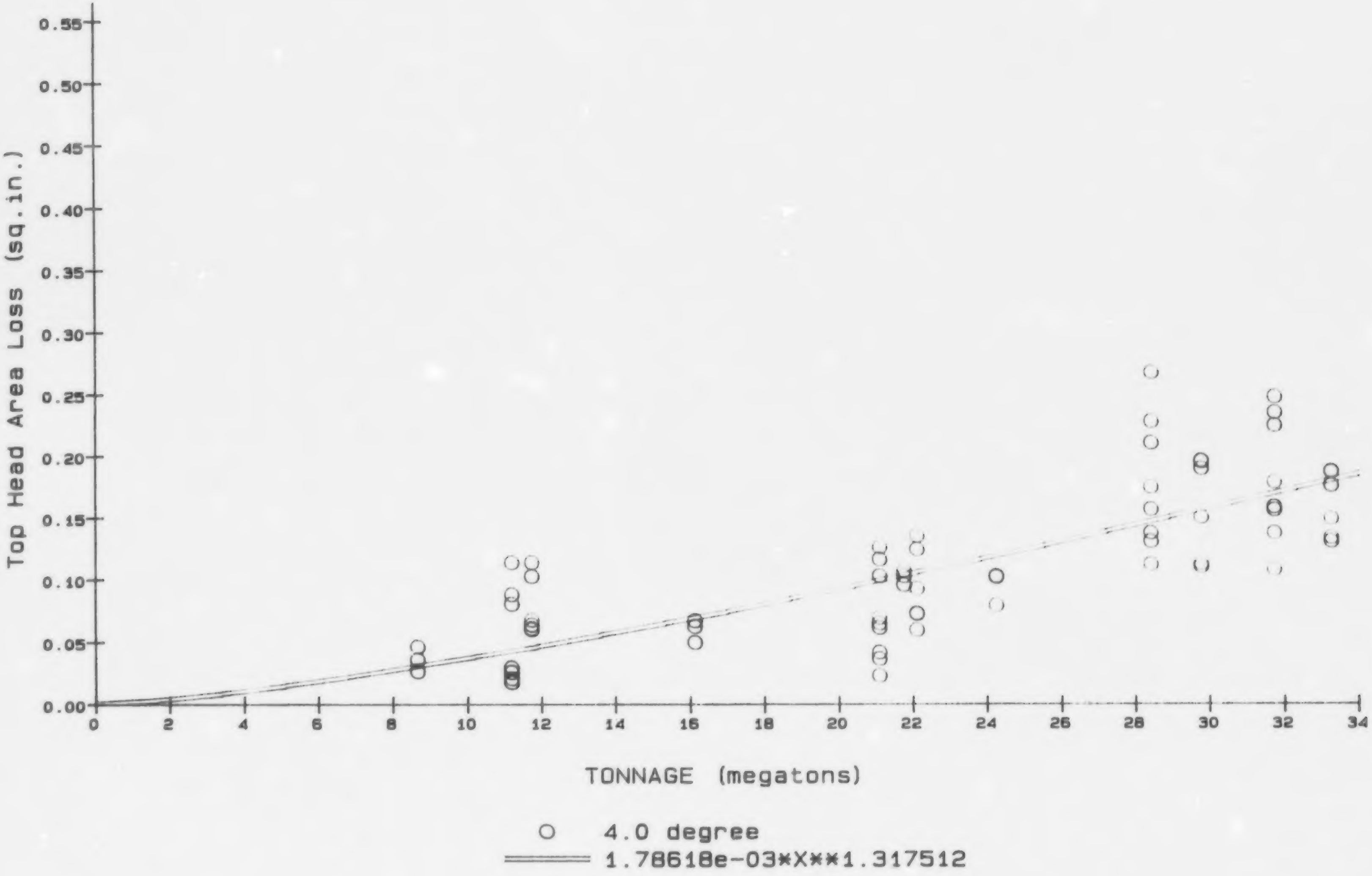
TUMBAREA620 13-DEC-88 9: 28 Page 1

TOP HEAD AREA LOSS vs TONNAGE . LOW RAIL - 4.0 DEG CURVATURE



TUMBAREA621 13-DEC-88 9: 32 Page 1

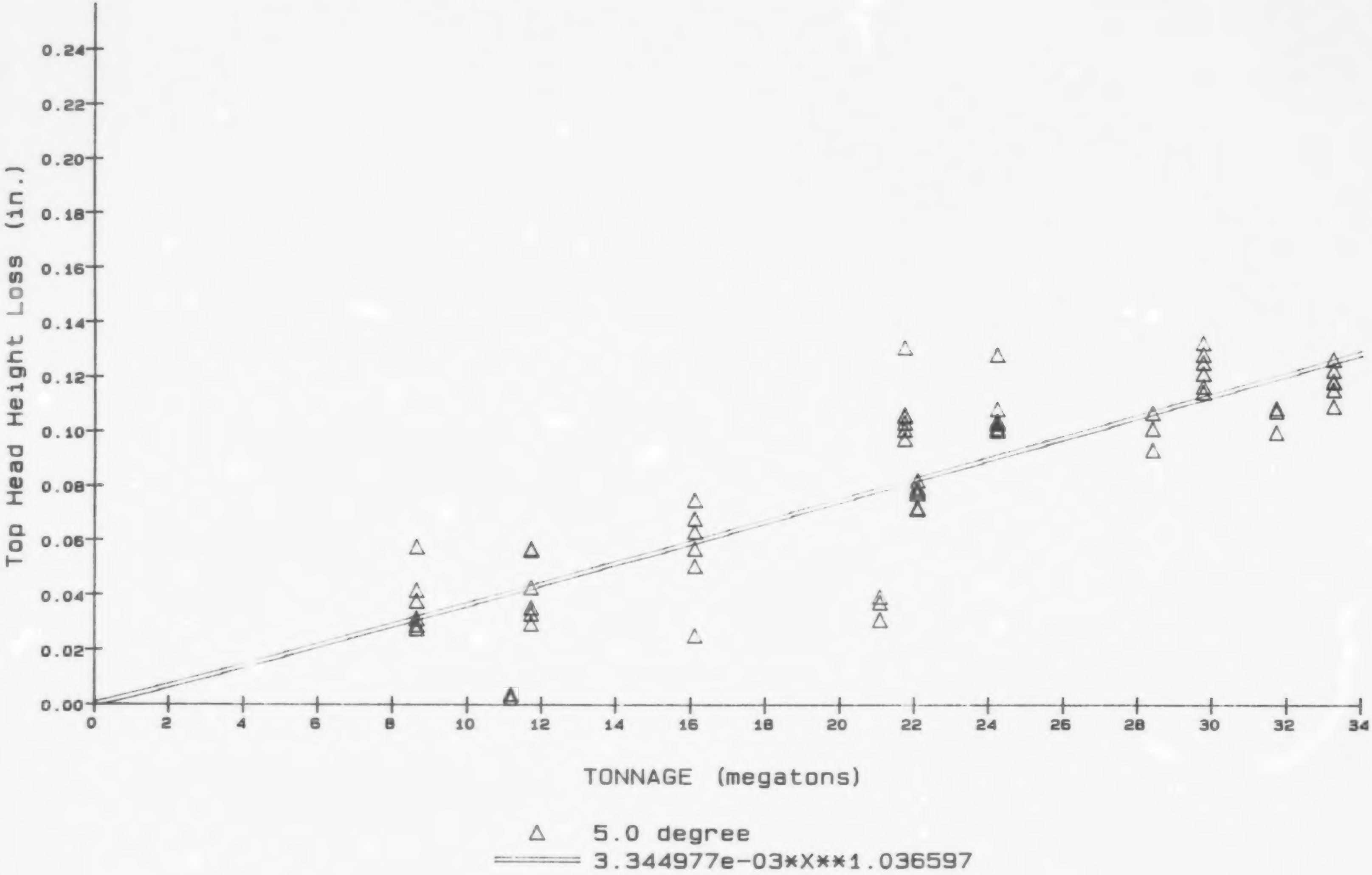
TOP HEAD AREA LOSS vs TONNAGE . HIGH RAIL - 4.0 DEG CURVATURE



TUMBAREA710

13-DEC-88 9: 37 Page 1

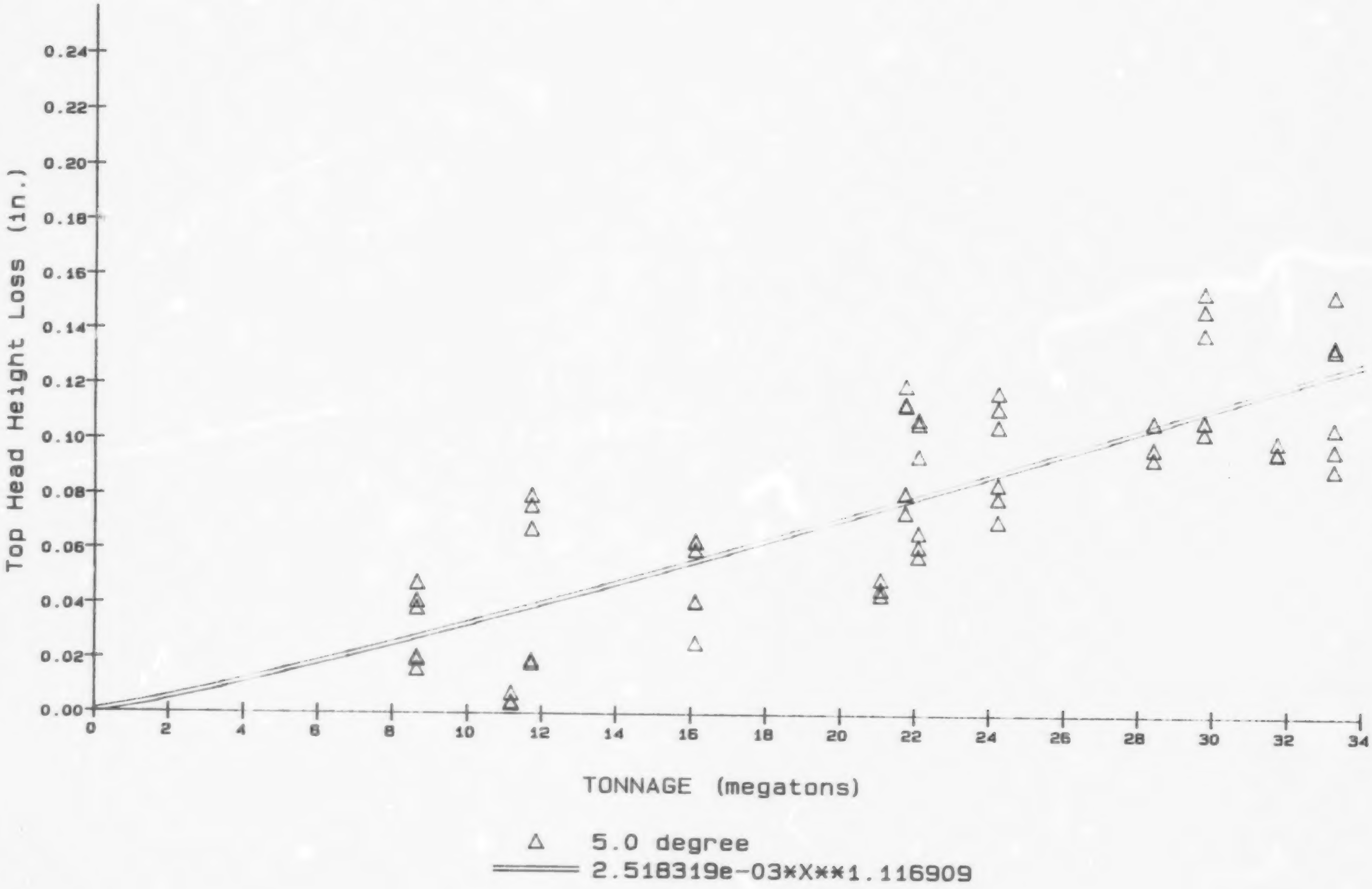
TOP HEAD HEIGHT LOSS vs TONNAGE . LOW RAIL - 5.0 DEG CURVATURE



TUMBAREA711

13-DEC-88 9: 41 Page 1

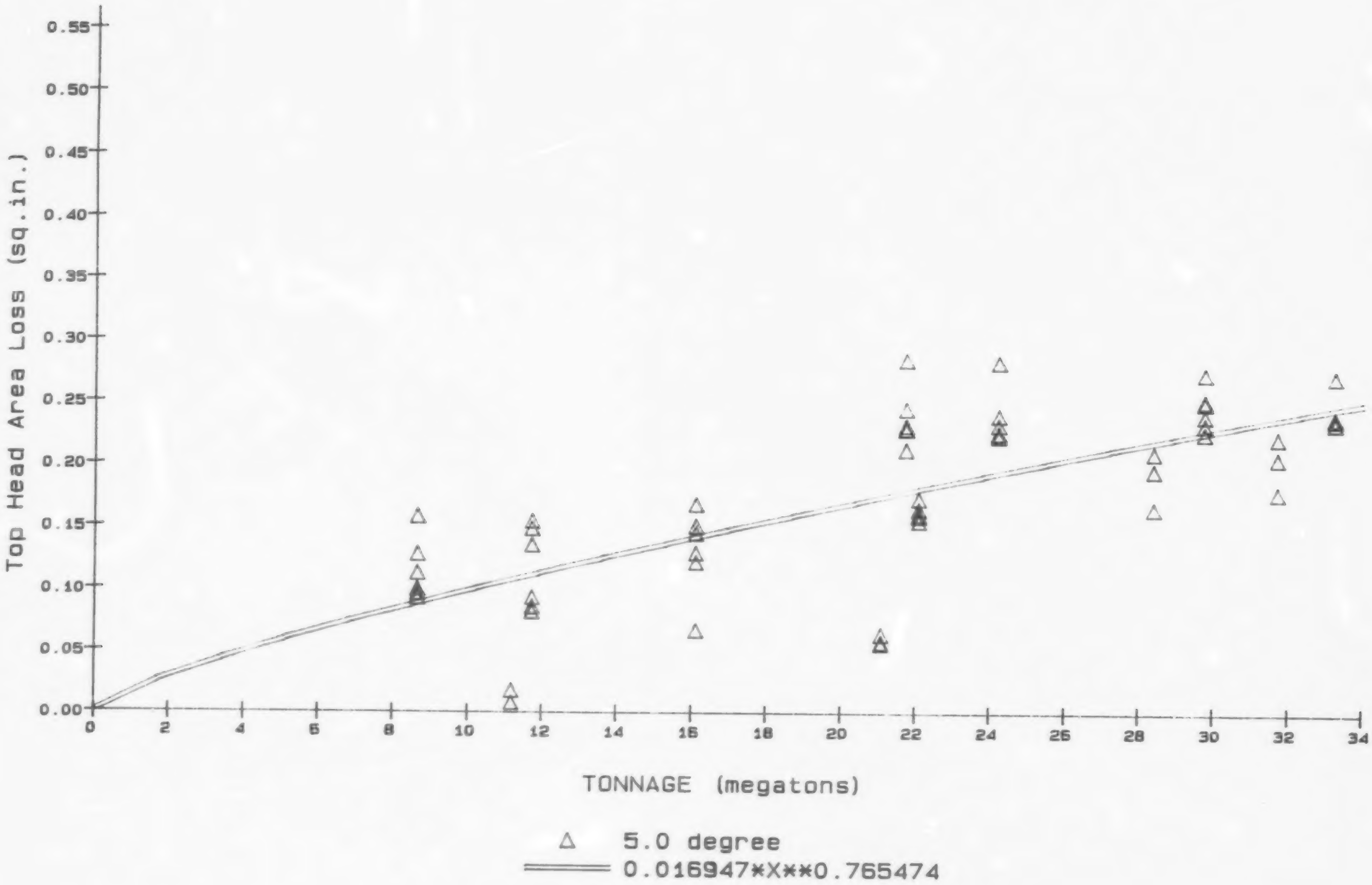
TOP HEAD HEIGHT LOSS vs TONNAGE . HIGH RAIL - 5.0 DEG CURVATURE



TUMBAREA720

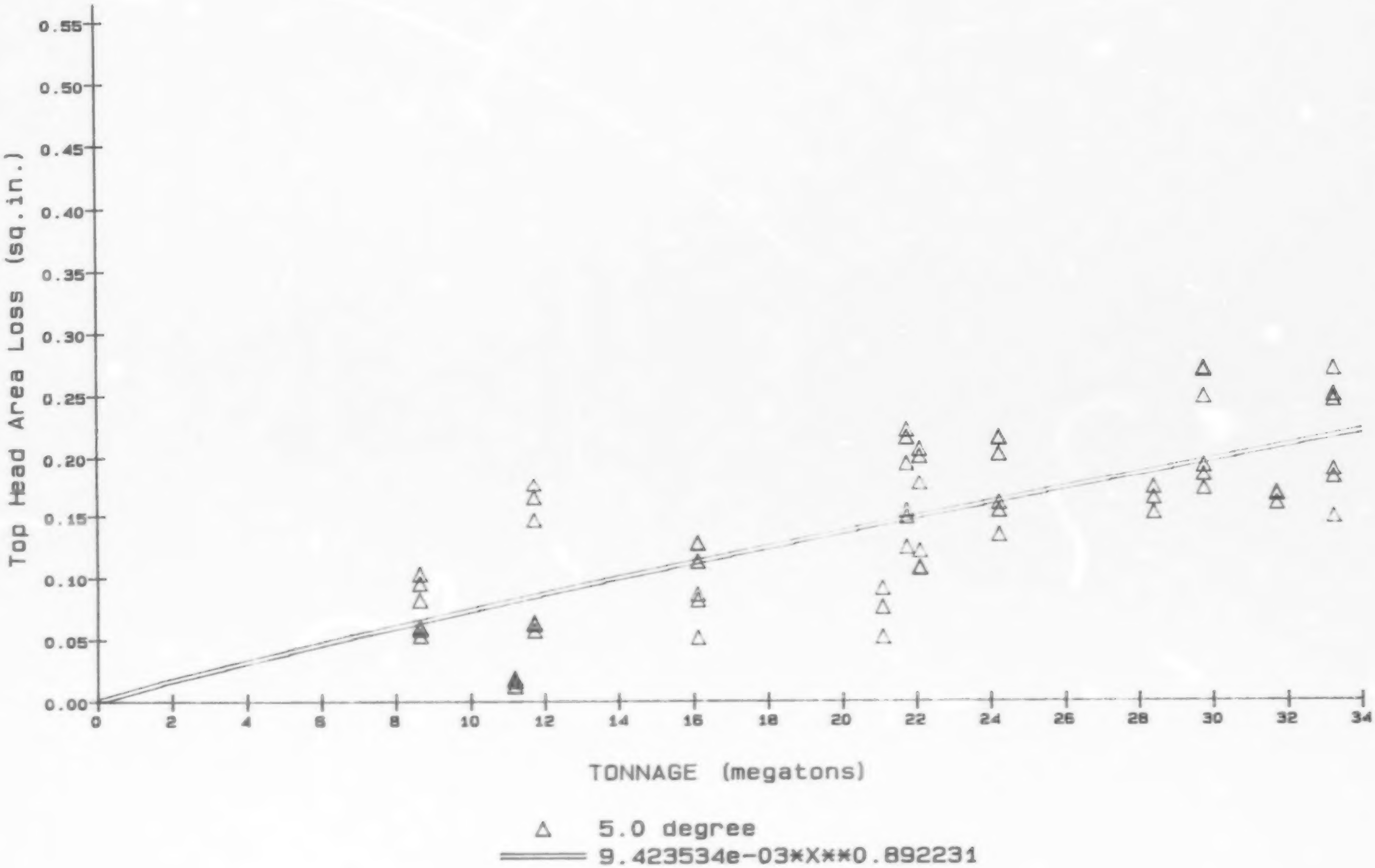
13-DEC-88 9: 44 Page 1

TOP HEAD AREA LOSS vs TONNAGE . LOW RAIL - 5.0 DEG CURVATURE



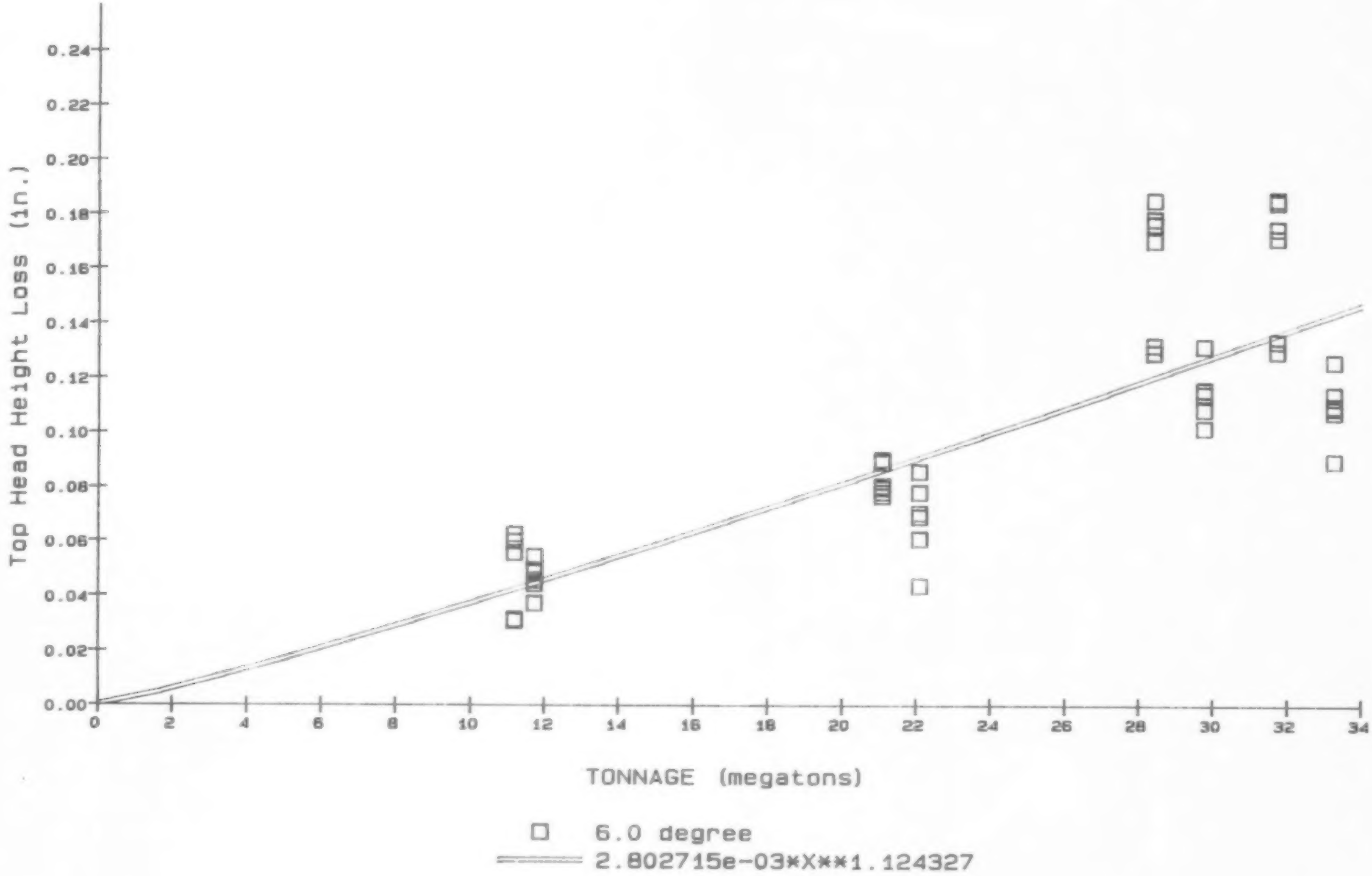
TUMBAREA721 13-DEC-88 9: 47 Page 1

TOP HEAD AREA LOSS vs TONNAGE . HIGH RAIL - 5.0 DEG CURVATURE



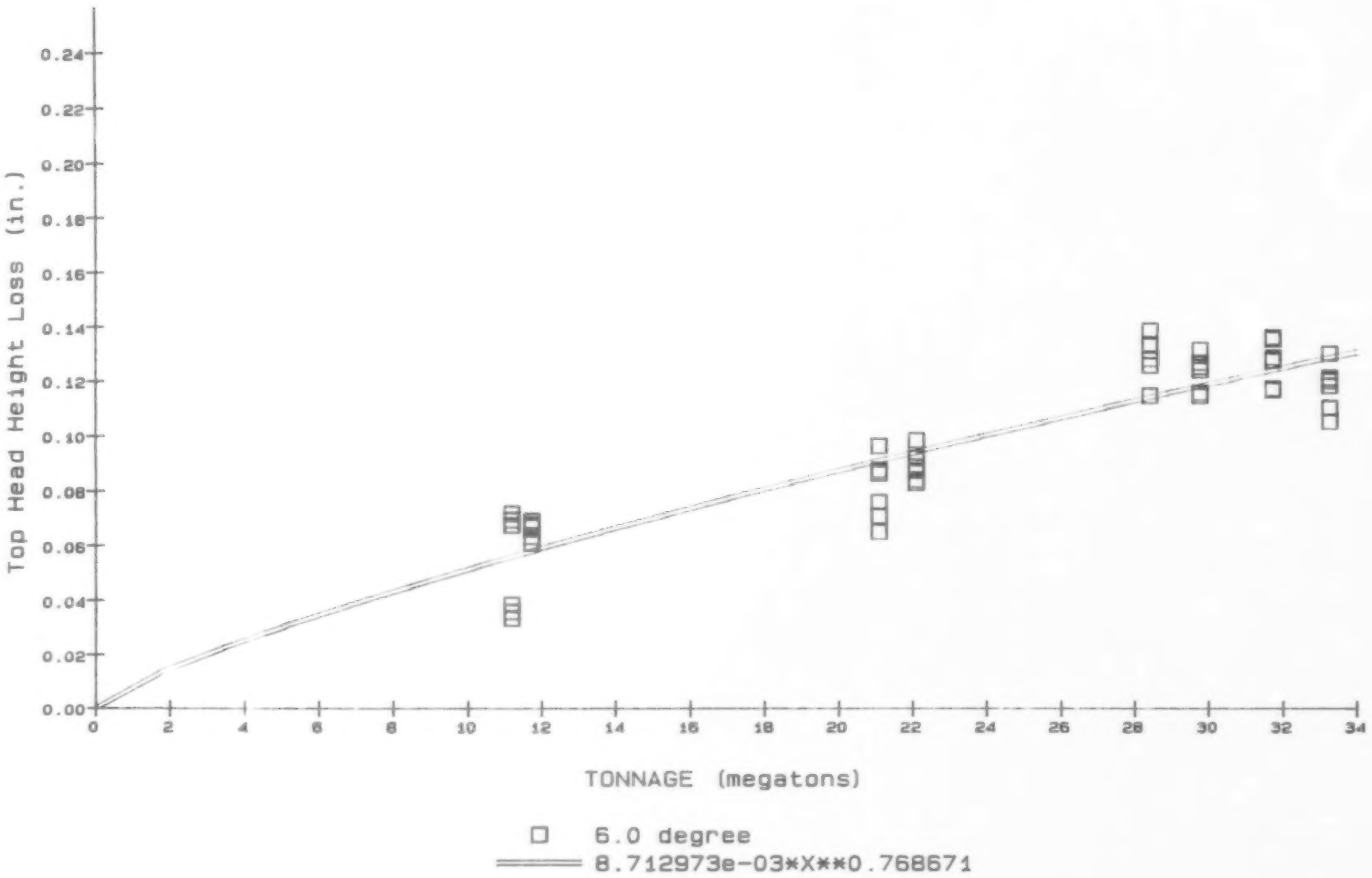
TUMBAREA810 13-DEC-88 9: 51 Page 1

TOP HEAD HEIGHT LOSS vs TONNAGE . LOW RAIL - 6.0 DEG CURVATURE



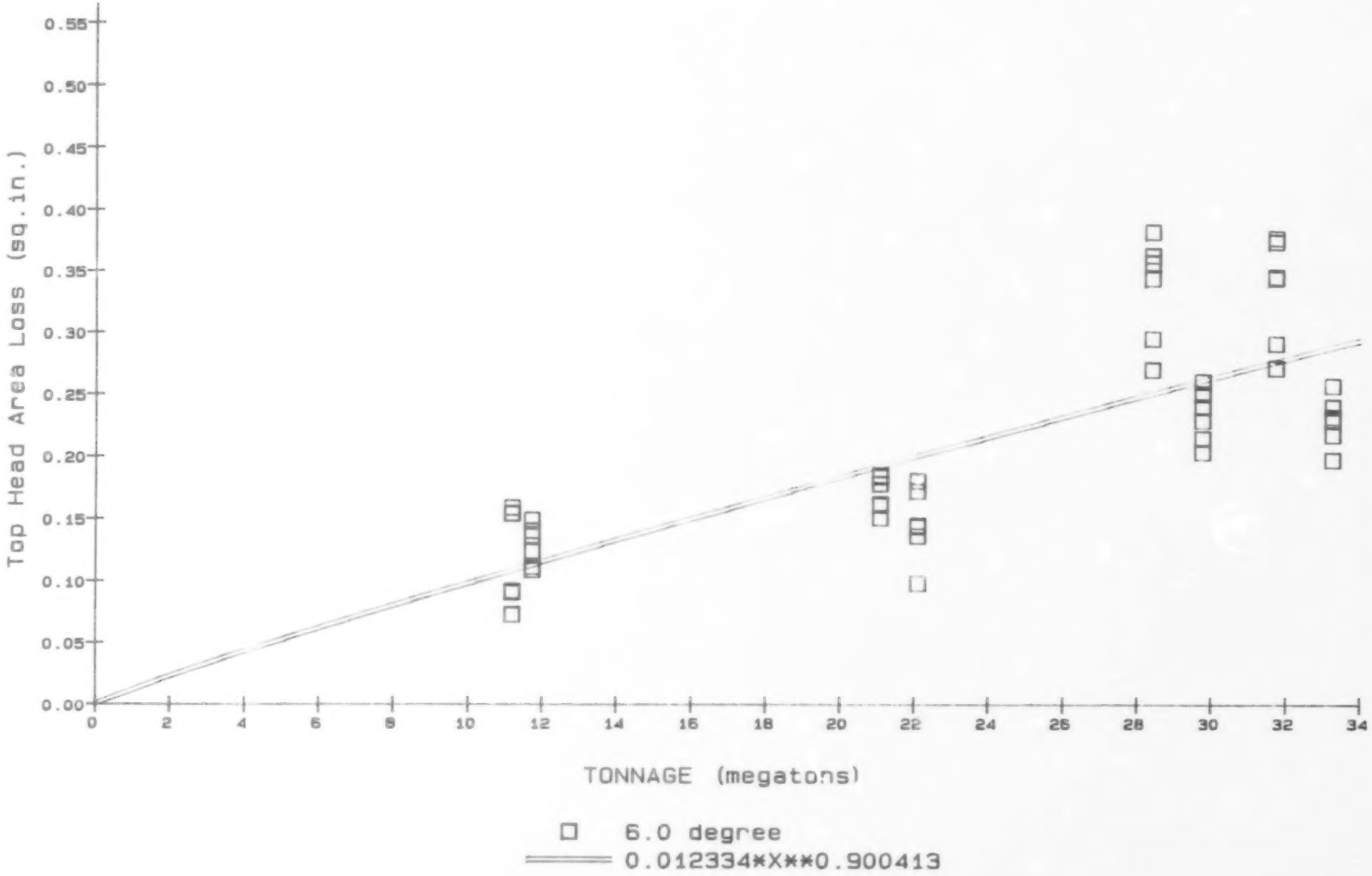
TUMBAREA811 13-DEC-88 9: 54 Page 1

TOP HEAD HEIGHT LOSS vs TONNAGE , HIGH RAIL - 6.0 DEG CURVATURE



TUMBAREA820 13-DEC-88 9:57 Page 1

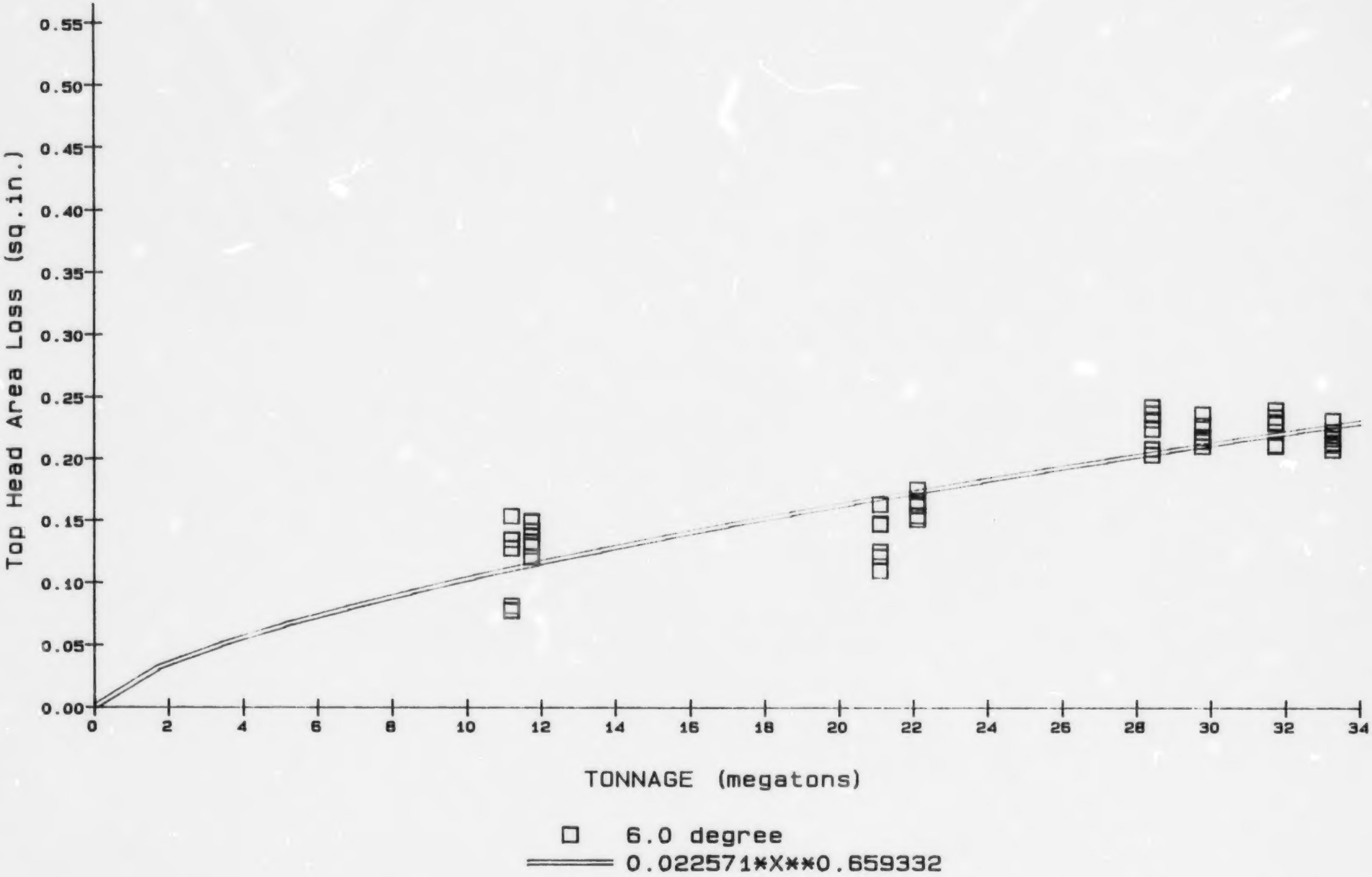
TOP HEAD AREA LOSS vs TONNAGE . LOW RAIL - 6.0 DEG CURVATURE



TUMBAREA821

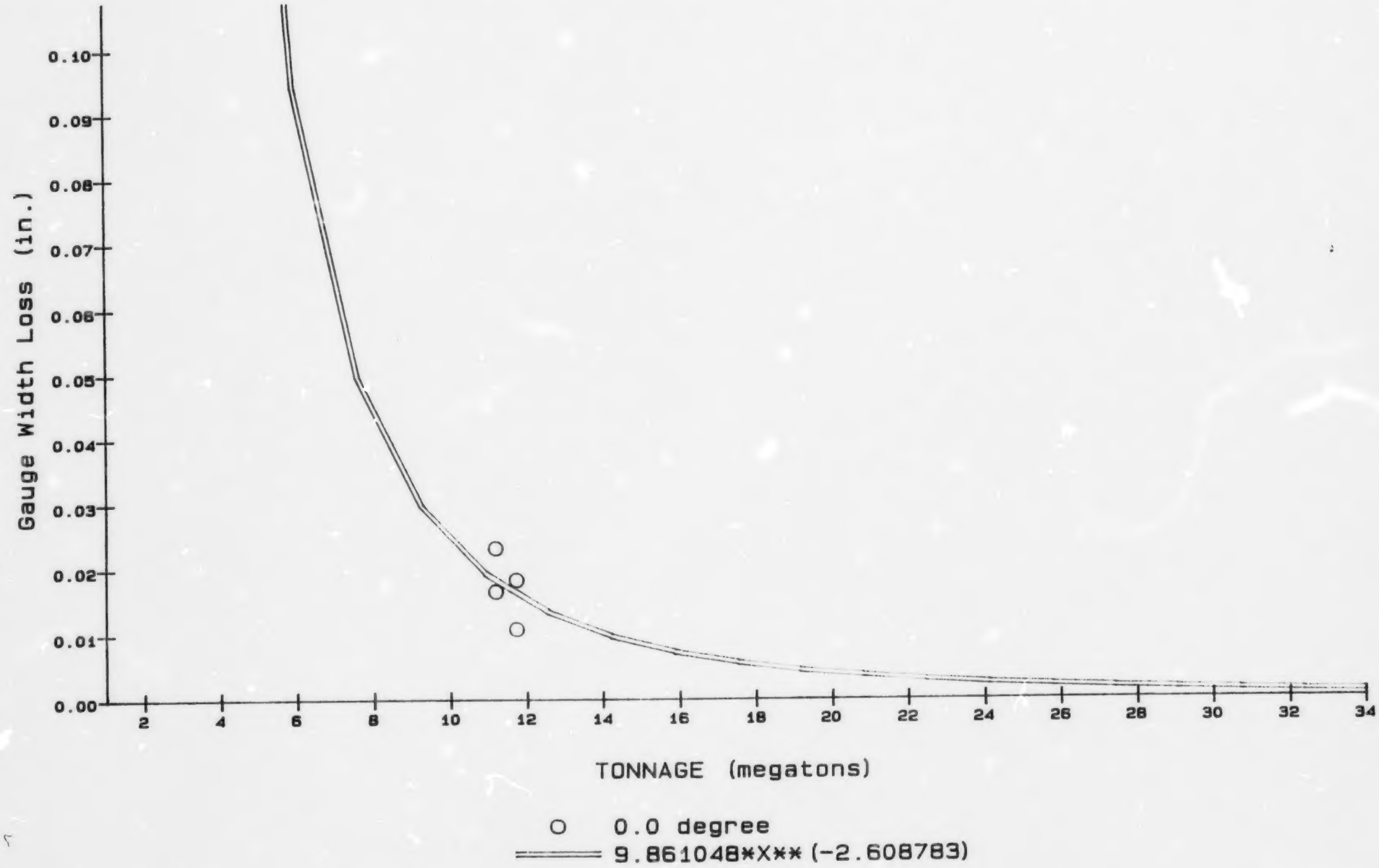
13-DEC-88 10: 01 Page 1

TOP HEAD AREA LOSS vs TONNAGE . HIGH RAIL - 6.0 DEG CURVATURE



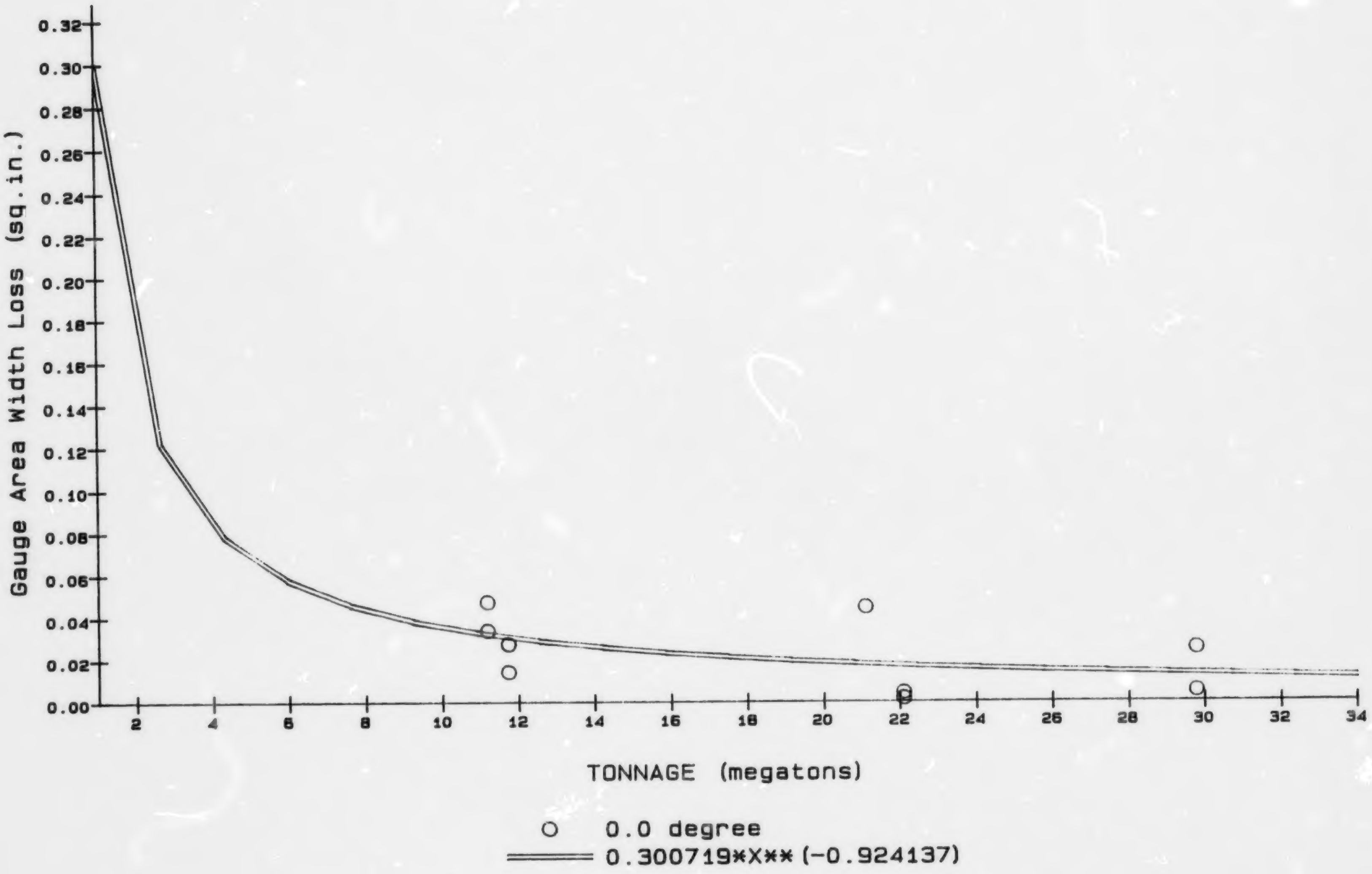
TUMBAREA130 13-DEC-88 10: 21 Page 1

GAUGE WIDTH LOSS vs TONNAGE . LOW RAIL - 0.0 DEG CURVATURE



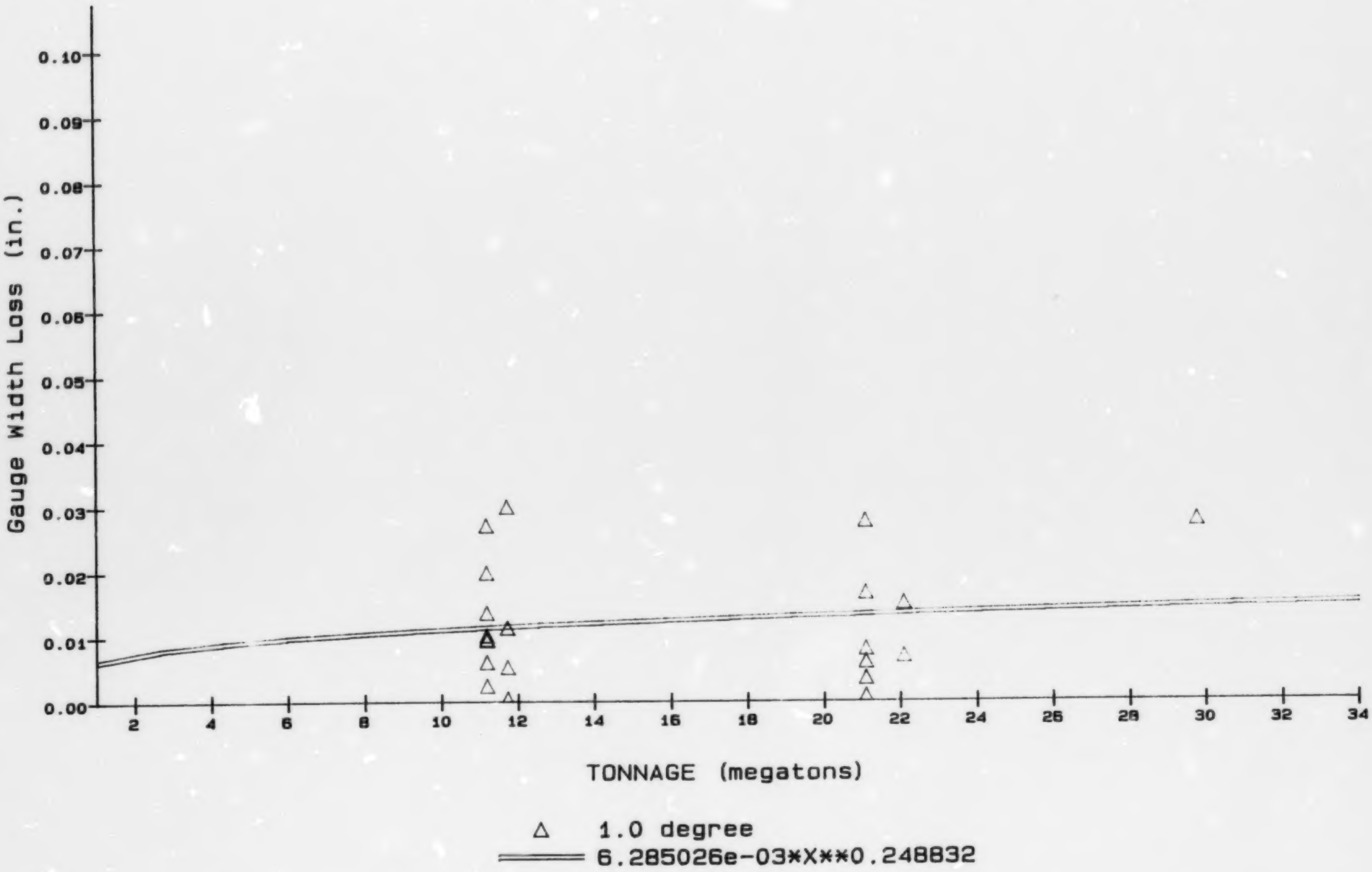
TUMBAREA140 13-DEC-88 10: 22 Page 1

GAUGE AREA LOSS vs TONNAGE . LOW RAIL - 0.0 DEG CURVATURE

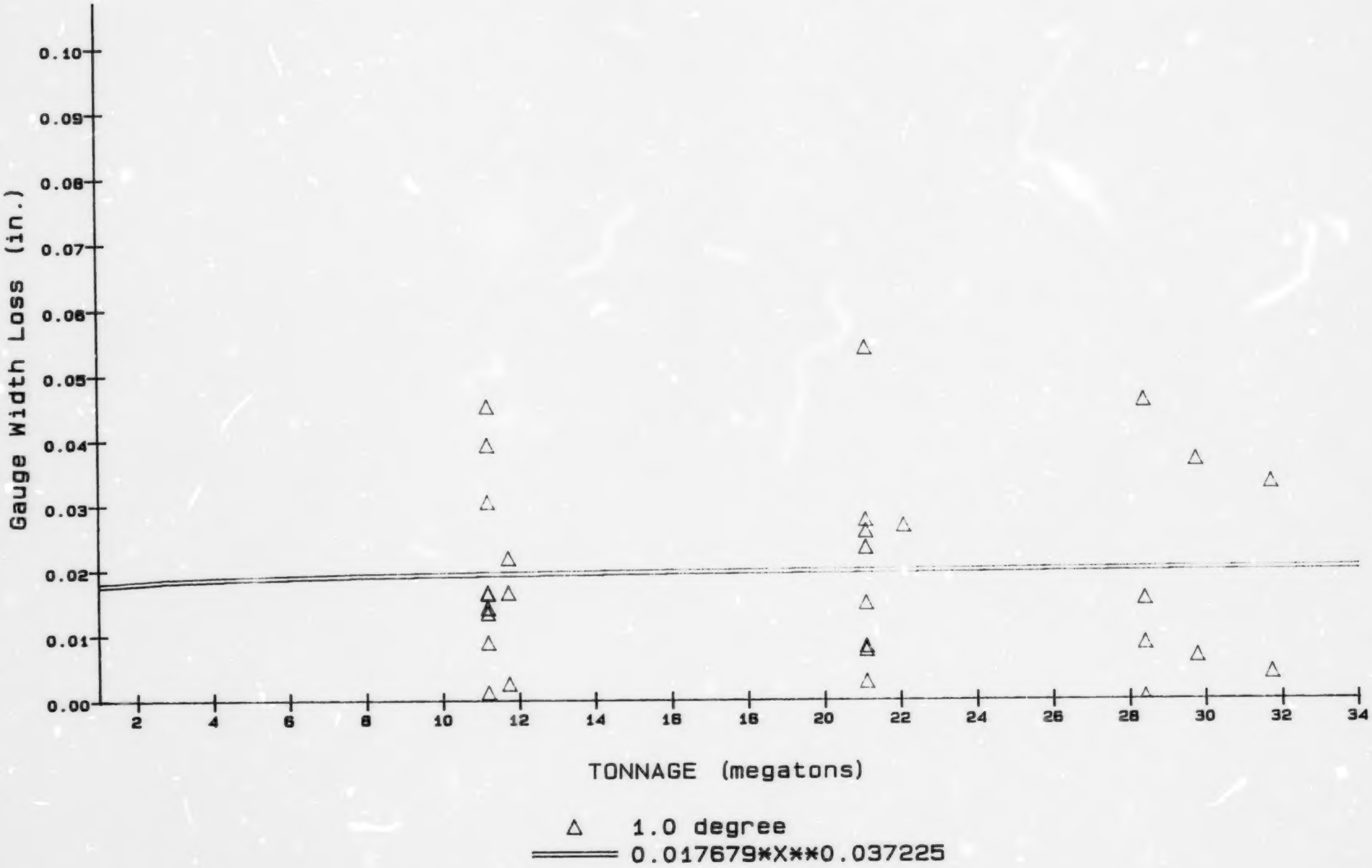


TUMBAREA230 13-DEC-88 10: 25 Page 1

GAUGE WIDTH LOSS vs TONNAGE , LOW RAIL - 1.0 DEG CURVATURE

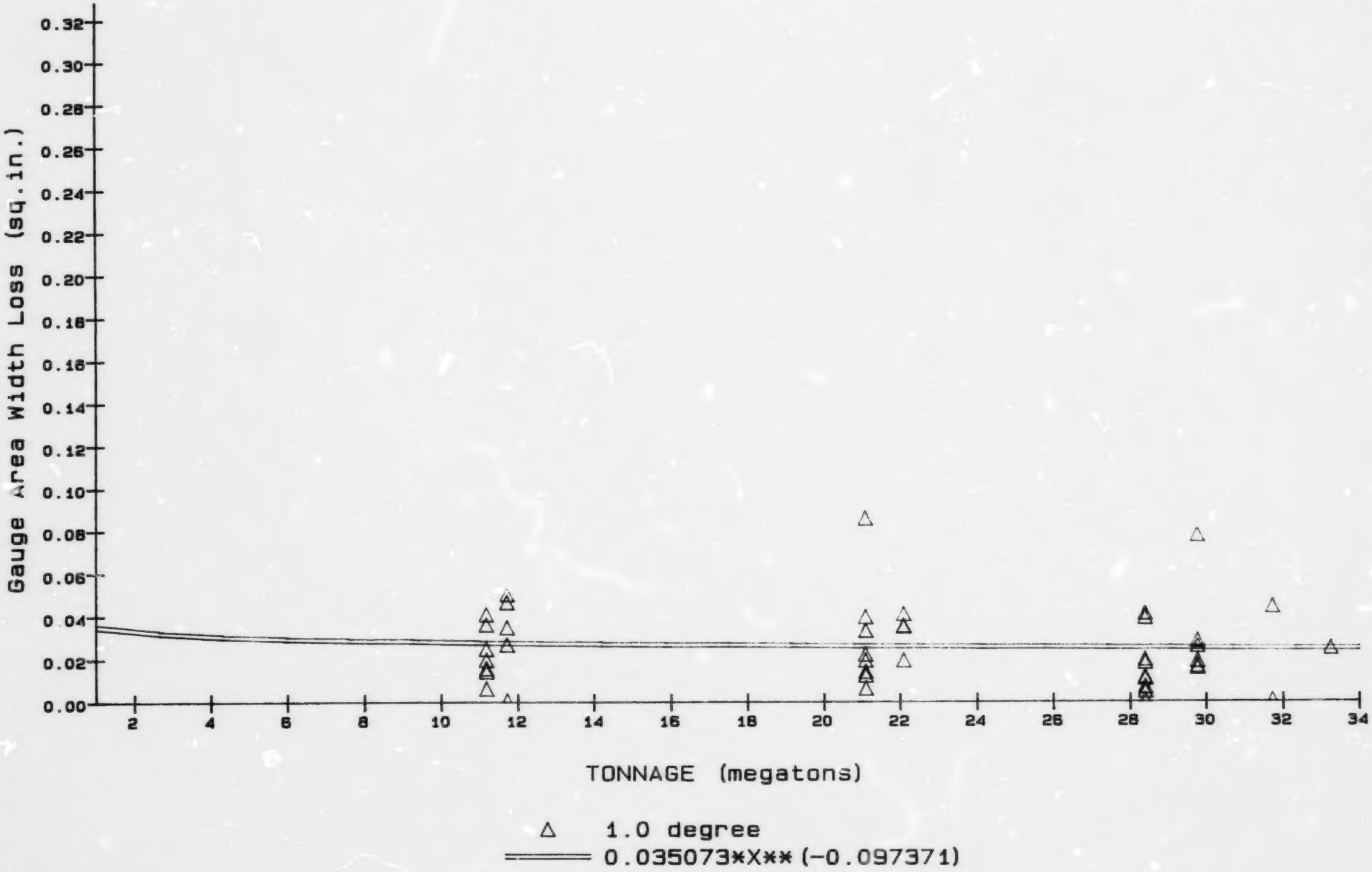


GAUGE WIDTH LOSS vs TONNAGE . HIGH RAIL - 1.0 DEG CURVATURE



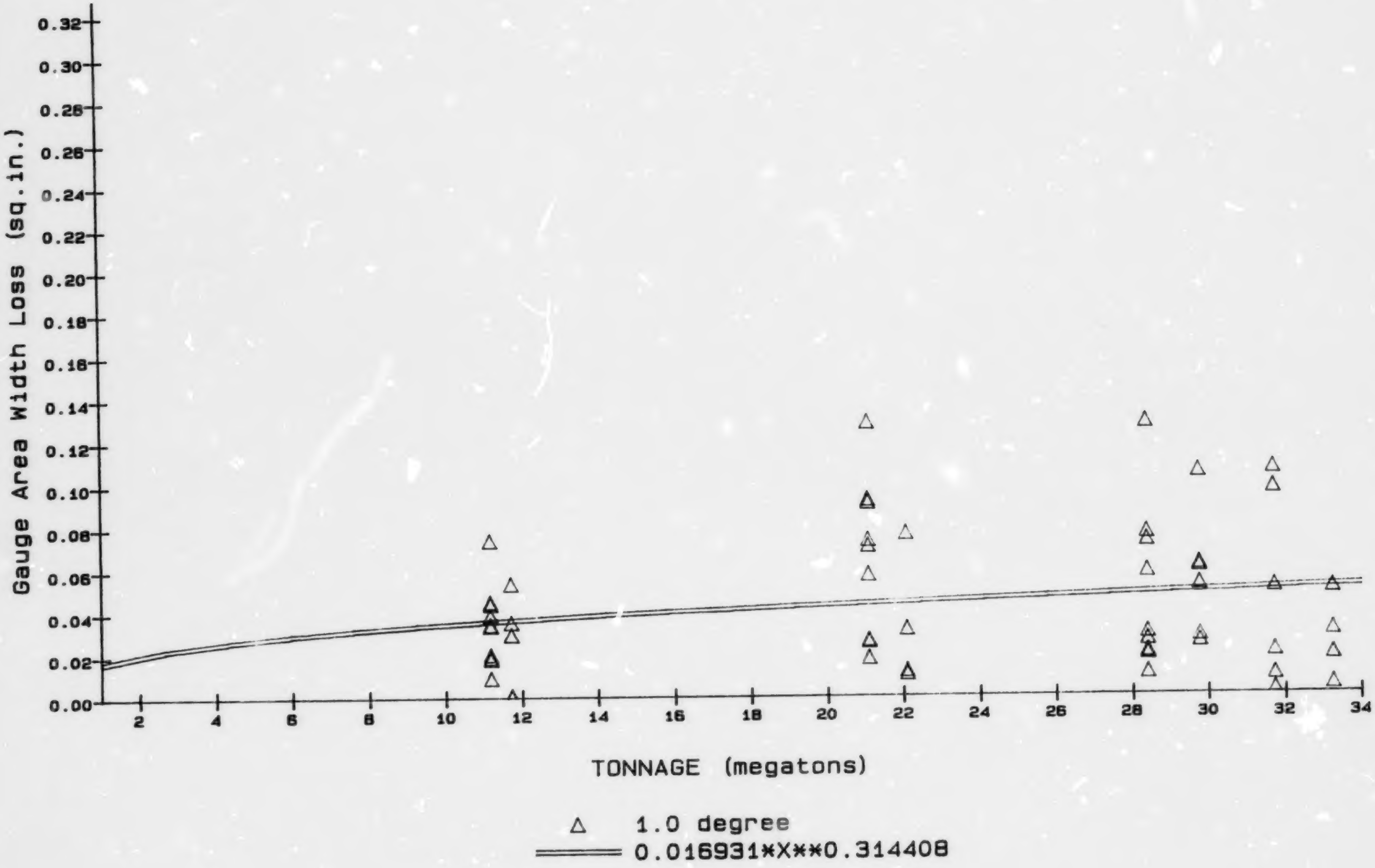
TUMBAREA240 13-DEC-88 10: 31 Page 1

GAUGE AREA LOSS vs TONNAGE . LOW RAIL - 1.0 DEG CURVATURE



TUMBAREA241 13-DEC-88 10: 35 Page 1

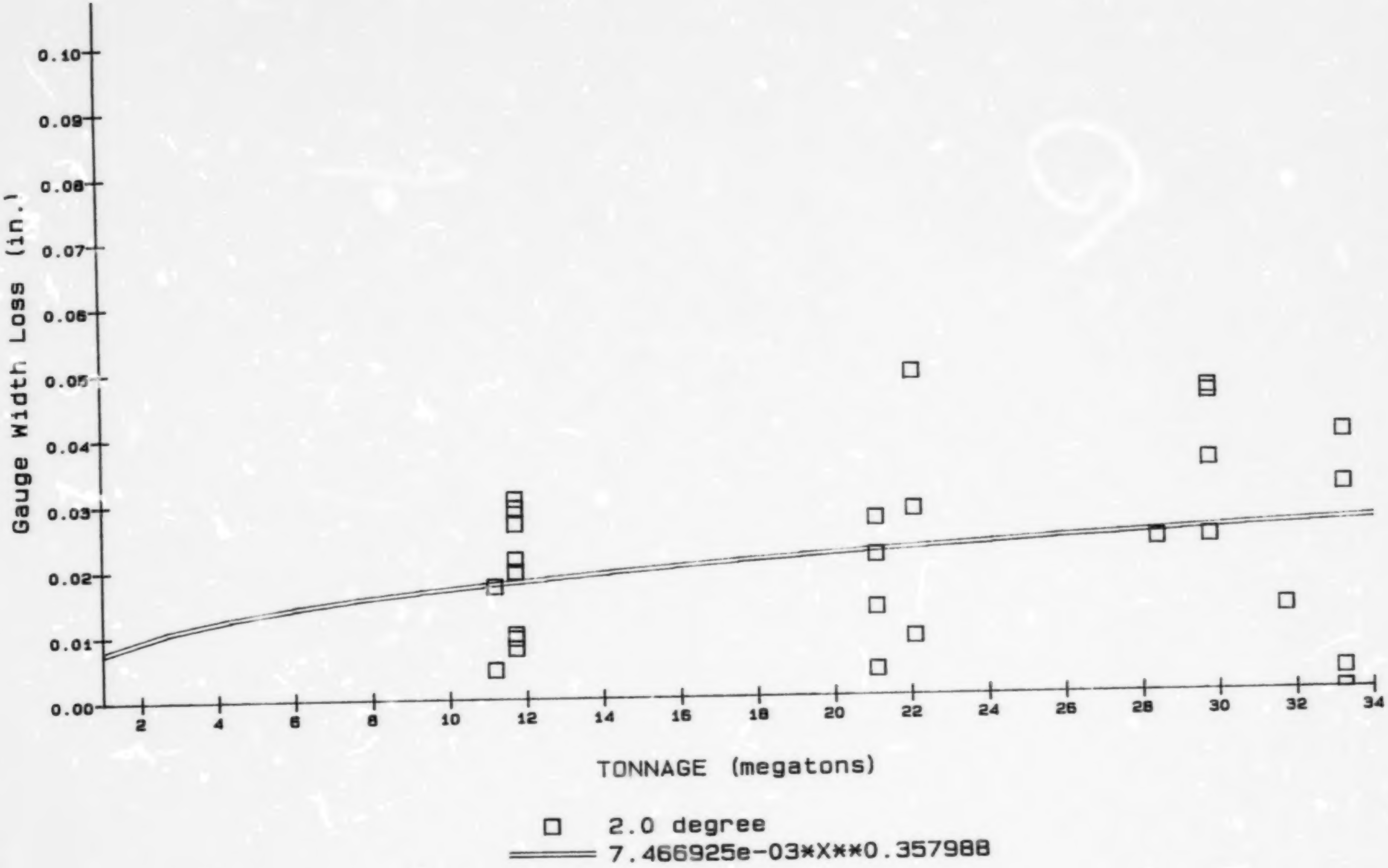
GAUGE AREA LOSS vs TONNAGE . HIGH RAIL - 1.0 DEG CURVATURE



TUMBAREA330

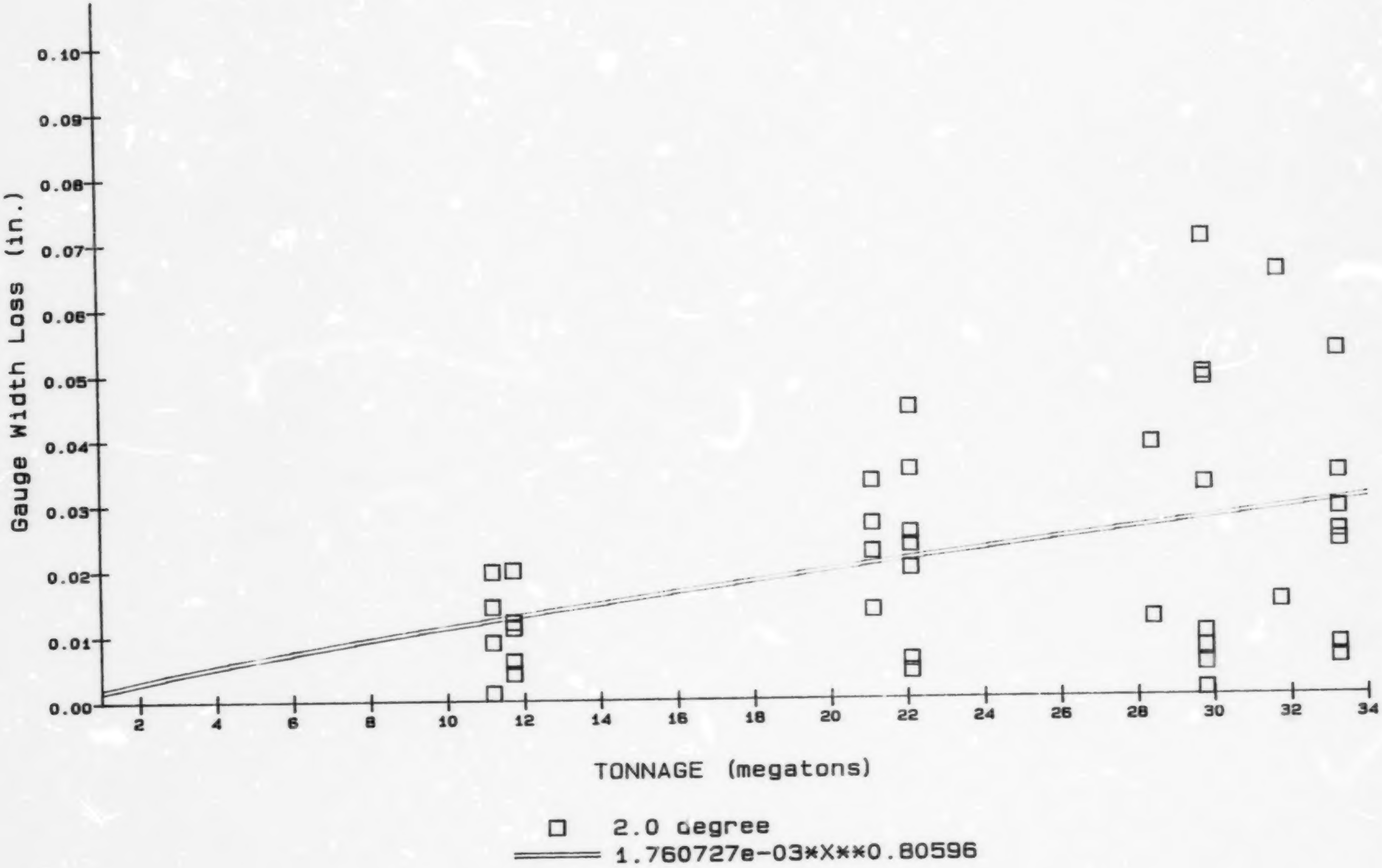
13-DEC-88 10: 38 Page 1

GAUGE WIDTH LOSS vs TONNAGE . LOW RAIL - 2.0 DEG CURVATURE



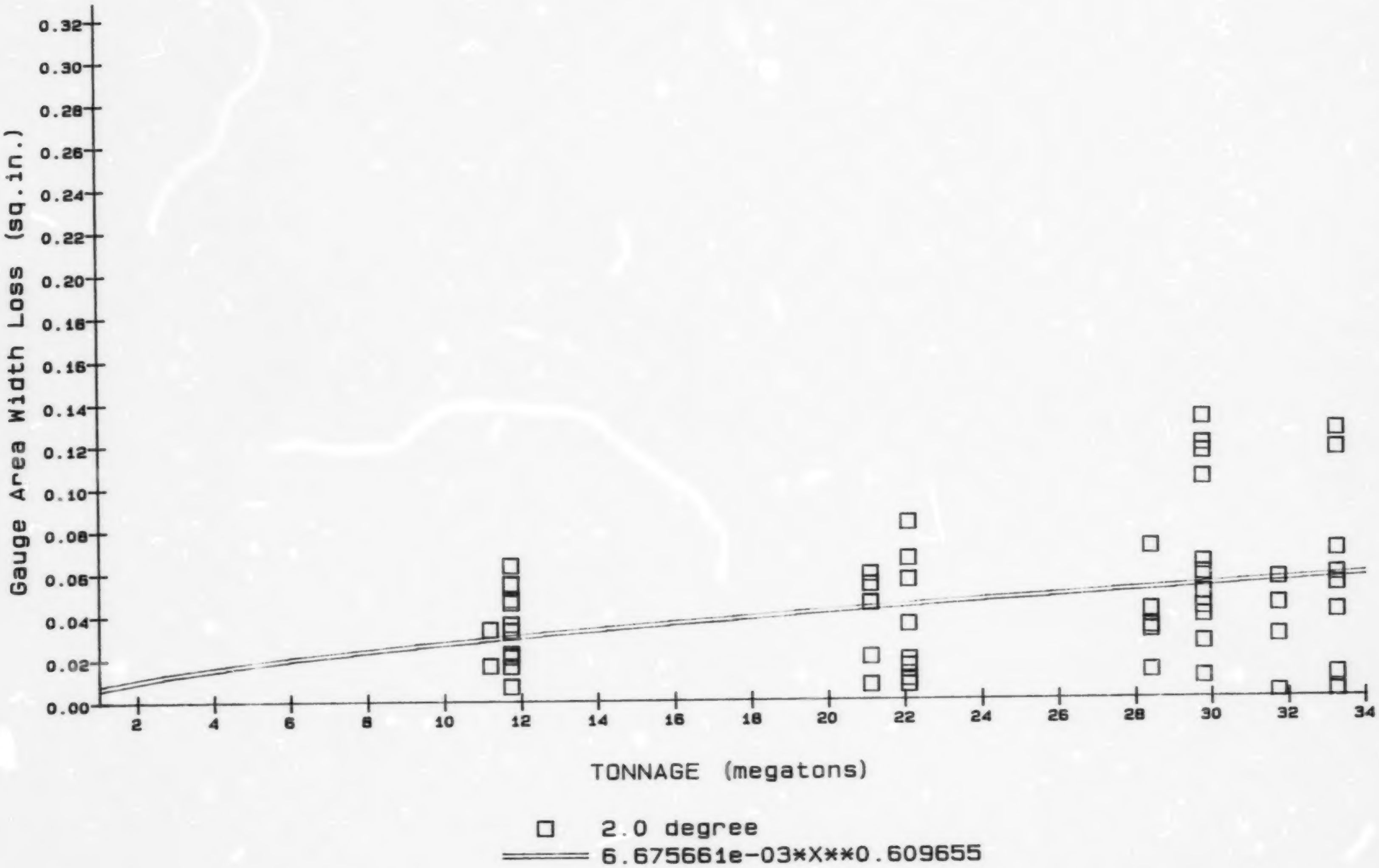
TUMBAREA331 13-DEC-88 10: 41 Page 1

GAUGE WIDTH LOSS vs TONNAGE . HIGH RAIL - 2.0 DEG CURVATURE



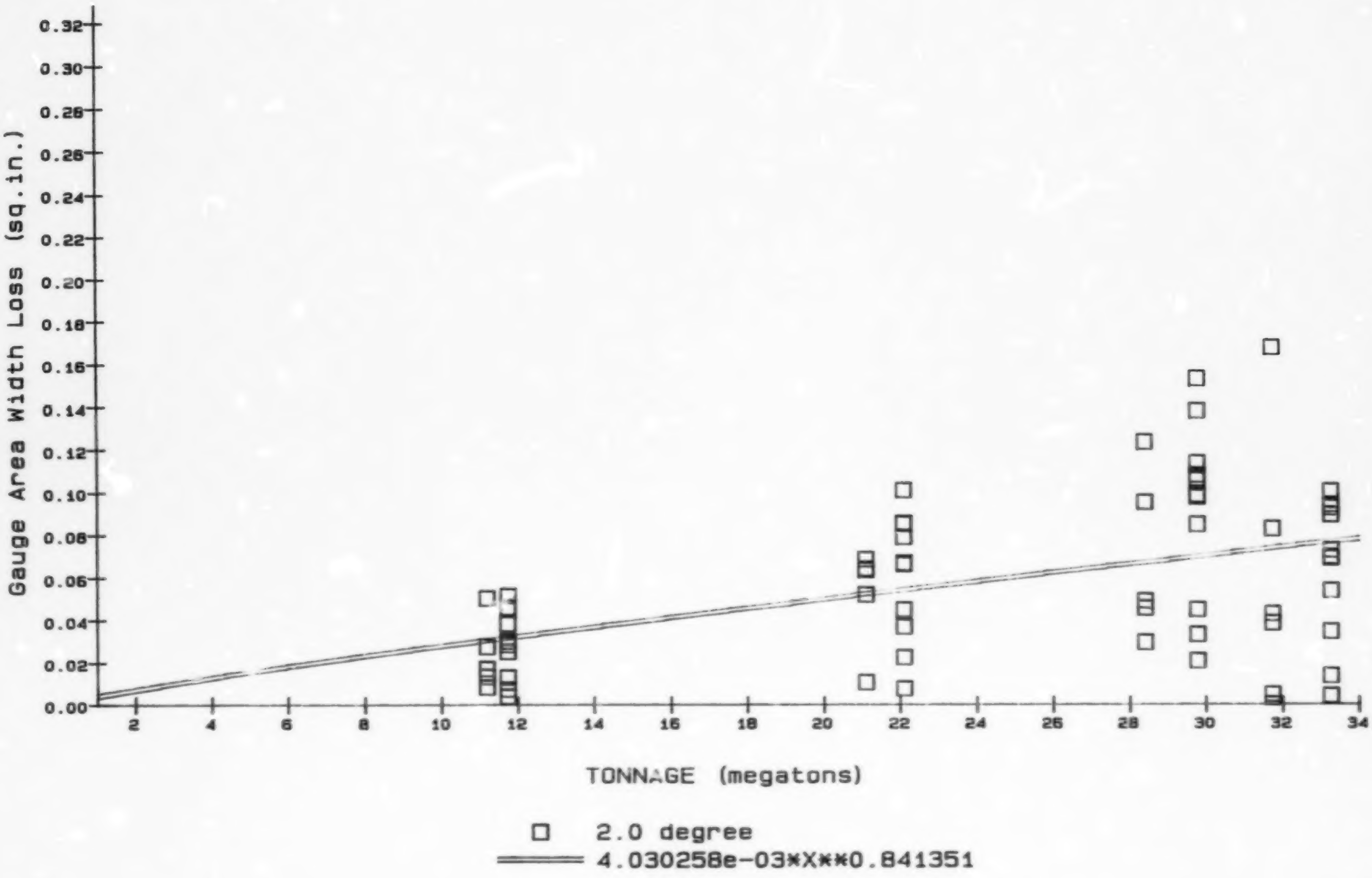
TUMBAREA340 13-DEC-88 10: 44 Page 1

GAUGE AREA LOSS vs TONNAGE . LOW RAIL - 2.0 DEG CURVATURE



TUMBAREA341 13-DEC-88 10: 48 Page 1

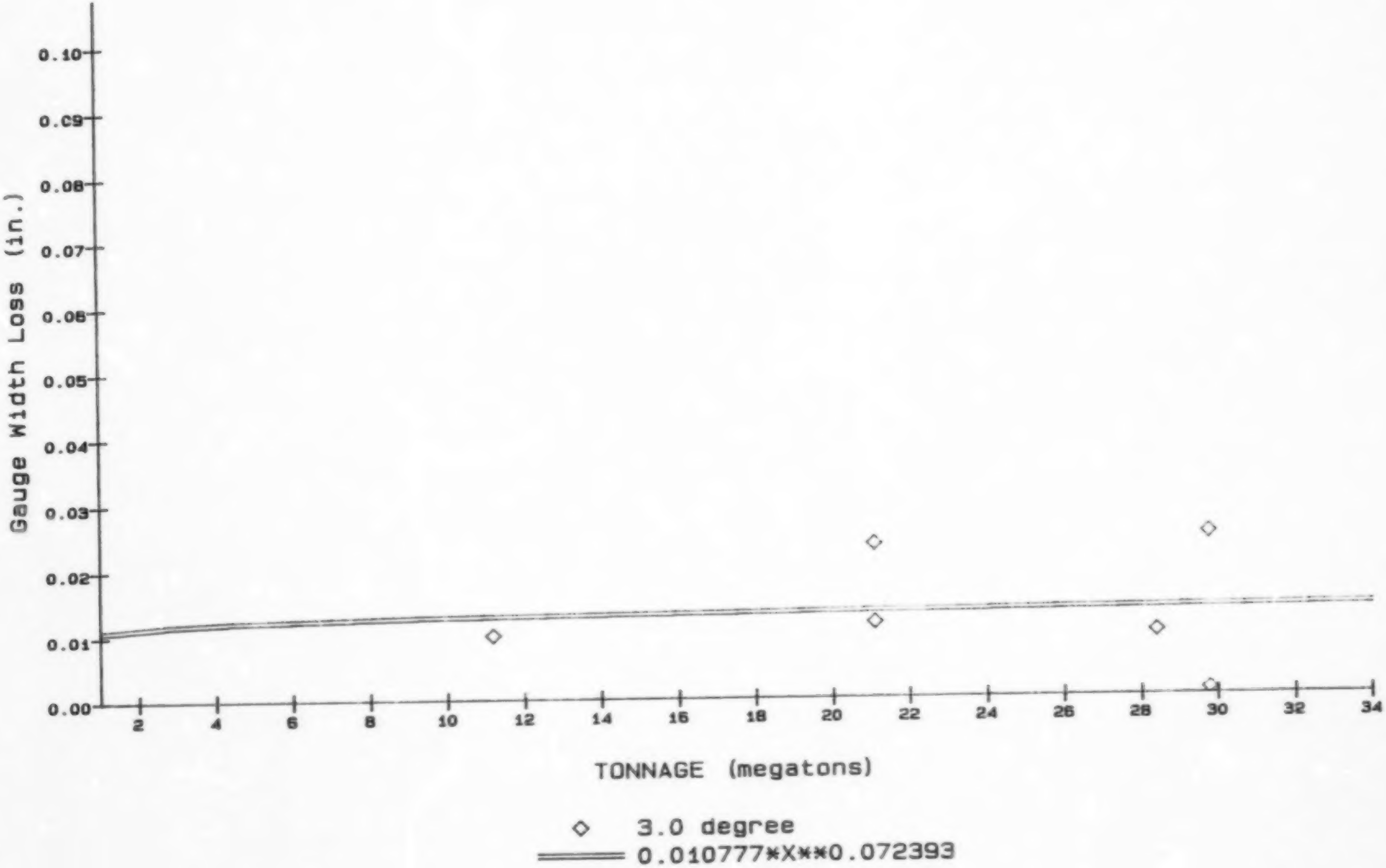
GAUGE AREA LOSS vs TONNAGE . HIGH RAIL - 2.0 DEG CURVATURE



TUMBAREA430

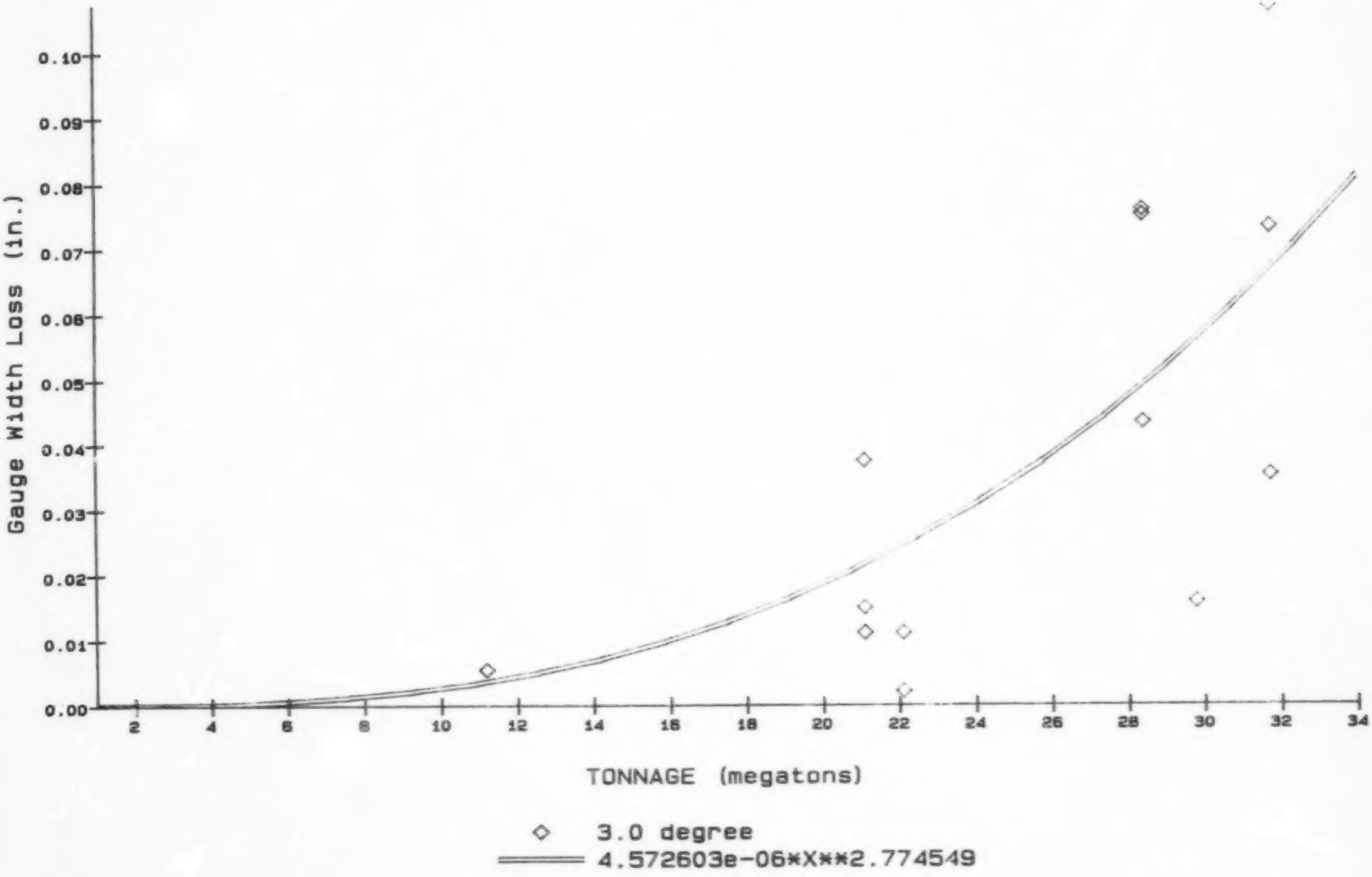
13-DEC-88 10:51 Page 1

GAUGE WIDTH LOSS vs TONNAGE . LOW RAIL - 3.0 DEG CURVATURE



TUMBAREA431 13-DEC-88 10: 54 Page 1

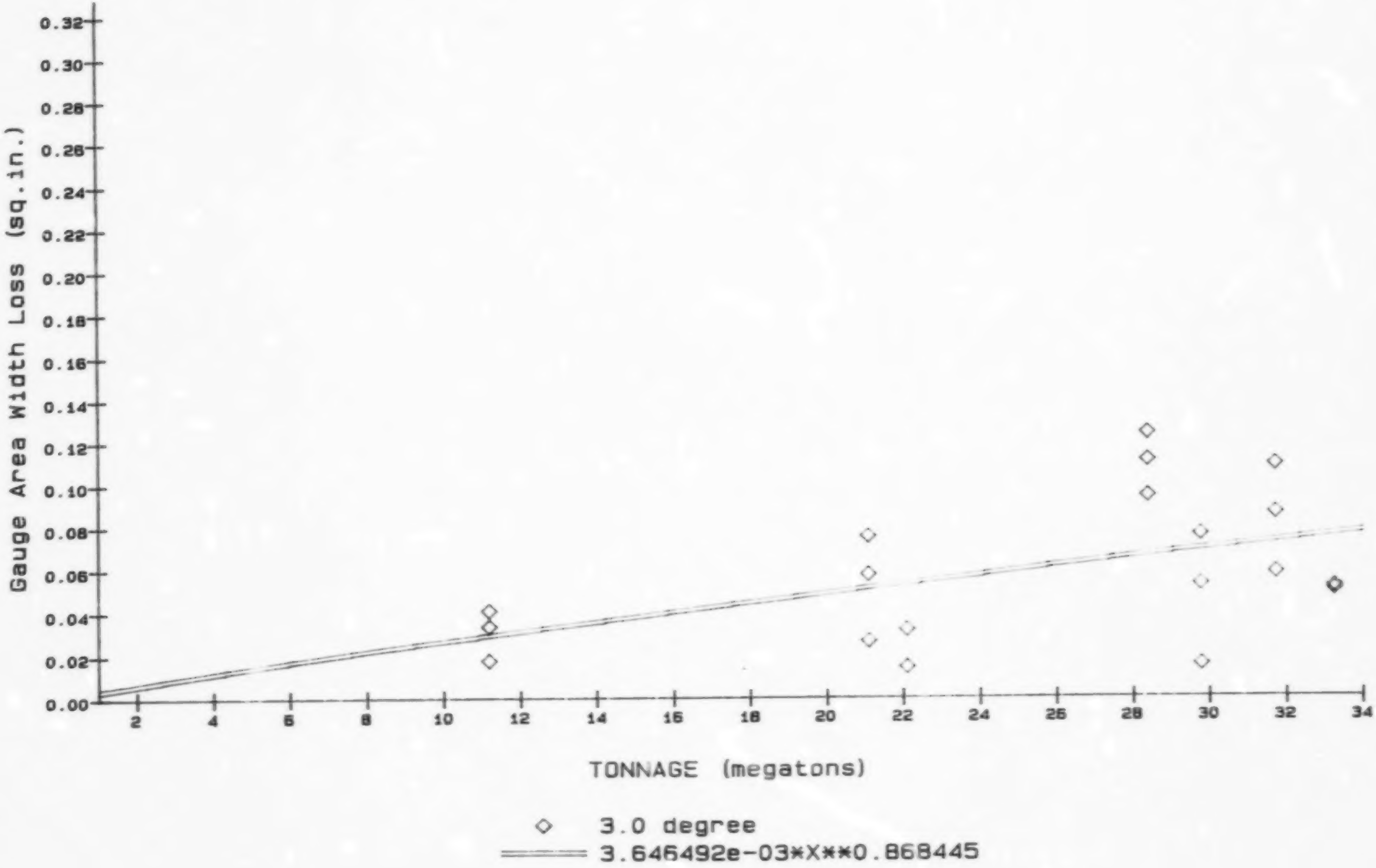
GAUGE WIDTH LOSS vs TONNAGE . HIGH RAIL - 3.0 DEG CURVATURE



TUMBAREA440

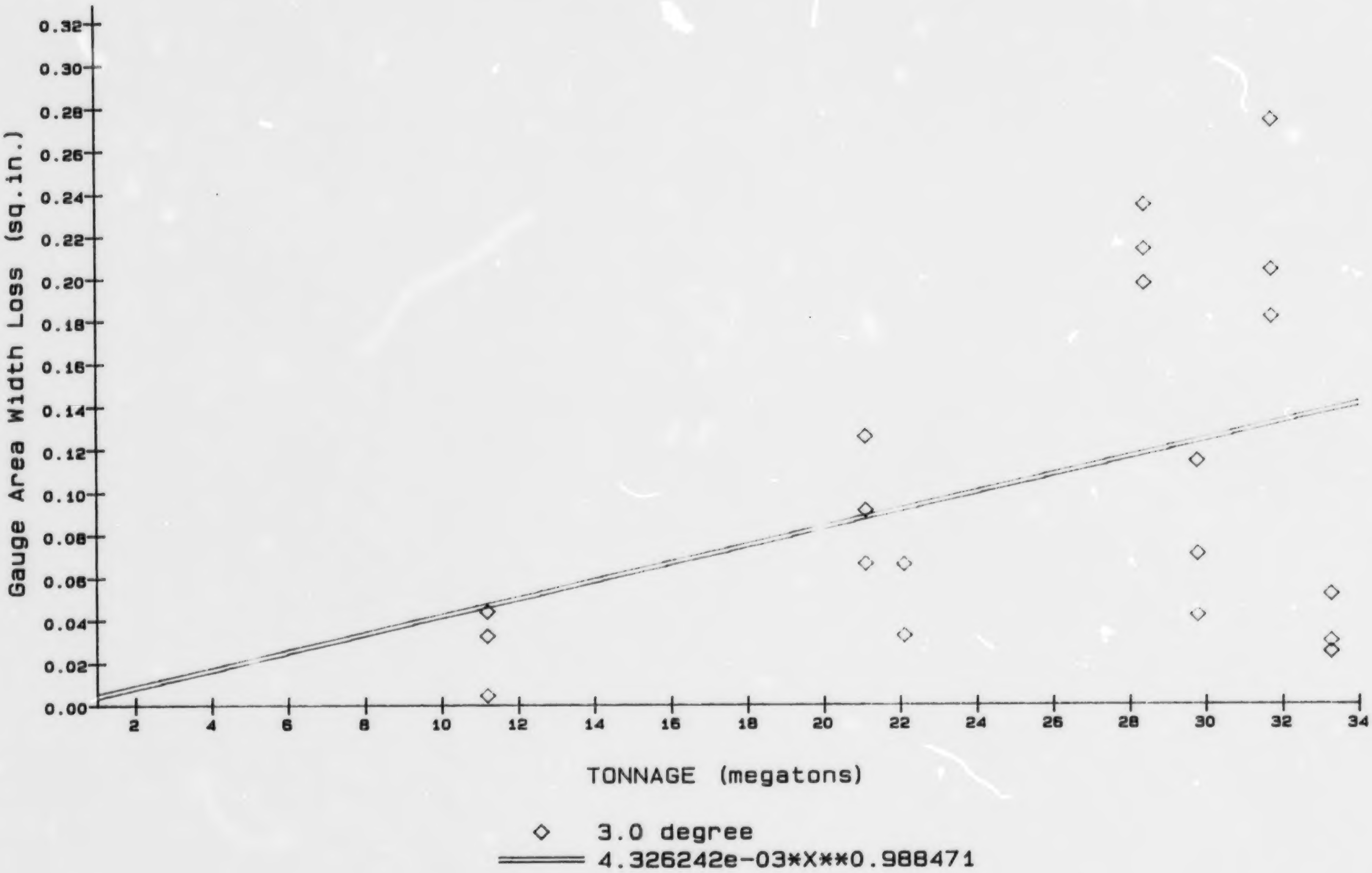
13-DEC-88 10: 57 Page 1

GAUGE AREA LOSS vs TONNAGE . LOW RAIL - 3.0 DEG CURVATURE



TUMBAREA441 13-DEC-88 11: 00 Page 1

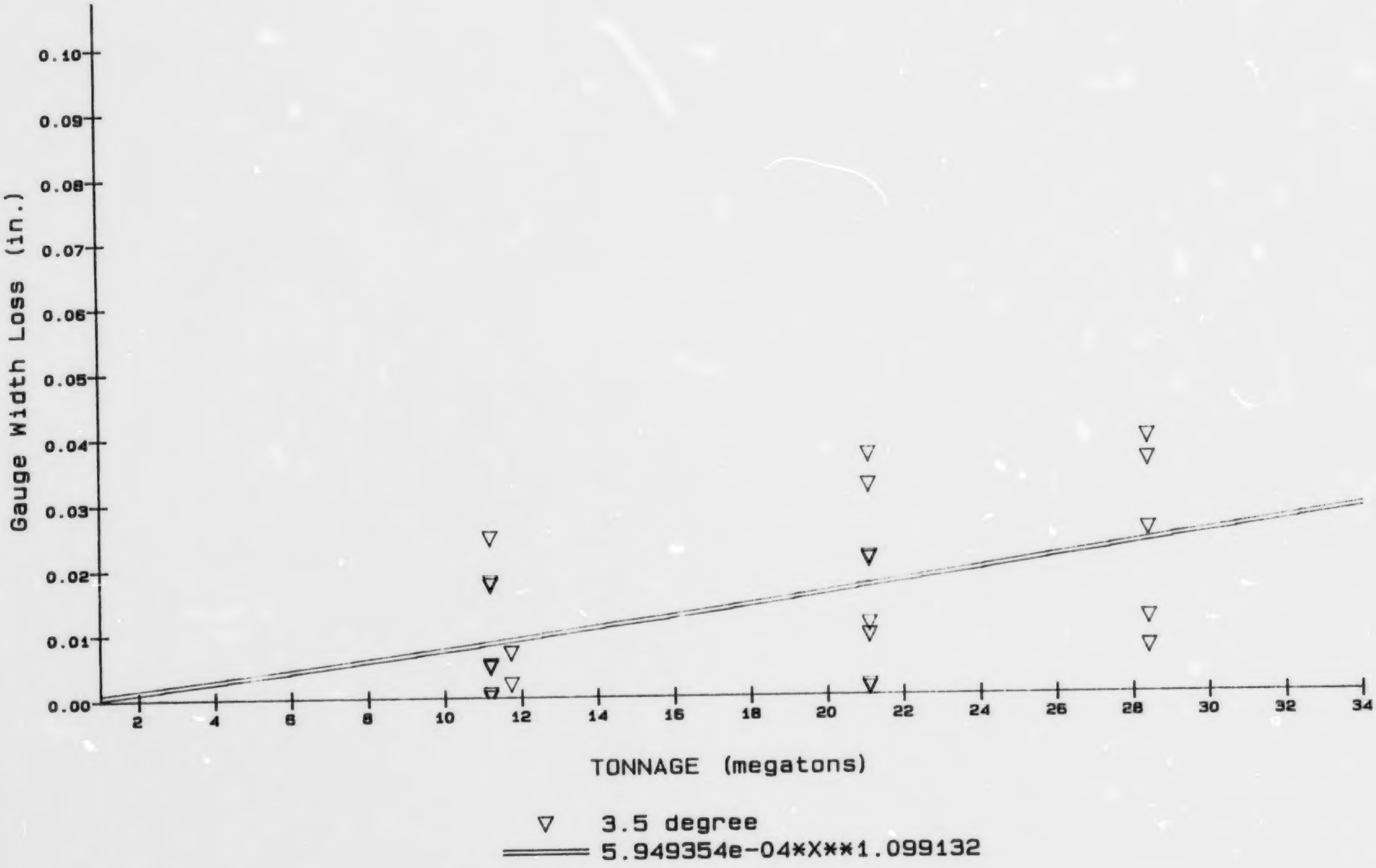
GAUGE AREA LOSS vs TONNAGE , HIGH RAIL - 3.0 DEG CURVATURE



TUMBAREA530

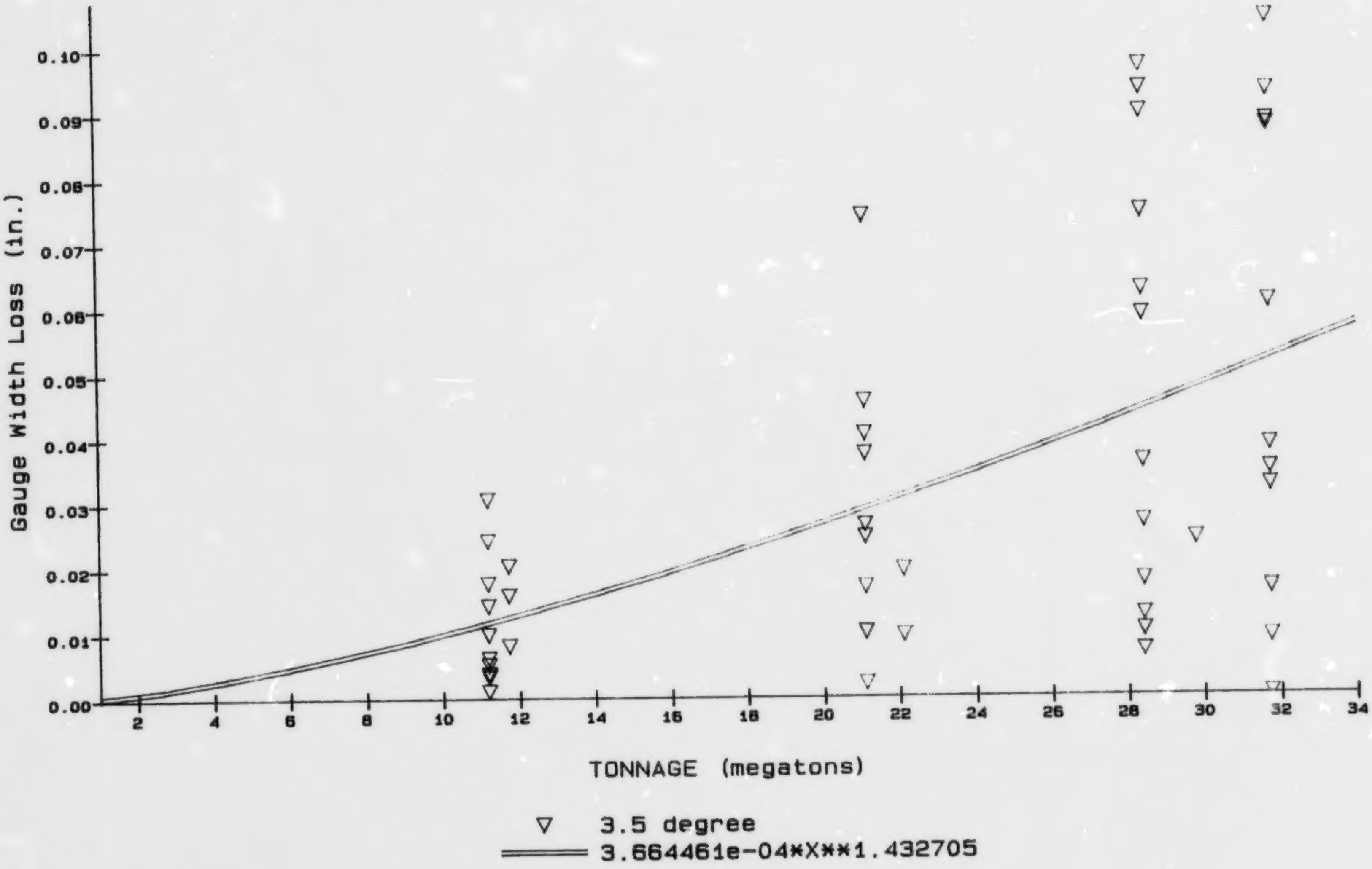
13-DEC-88 11: 03 Page 1

GAUGE WIDTH LOSS vs TONNAGE , LOW RAIL - 3.5 DEG CURVATURE



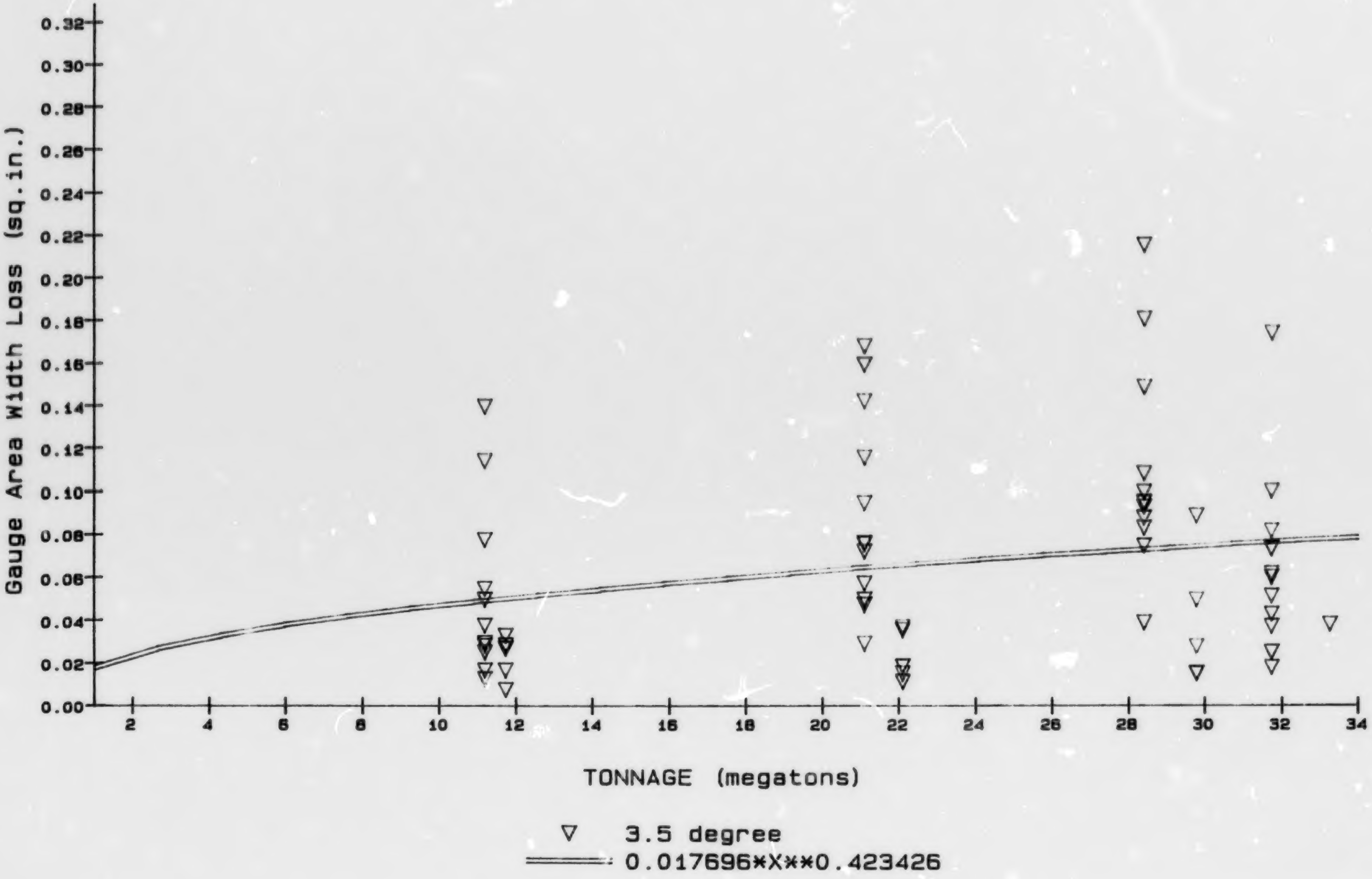
TUMBAREA531 13-DEC-88 11:06 Page 1

GAUGE WIDTH LOSS vs TONNAGE . HIGH RAIL - 3.5 DEG CURVATURE



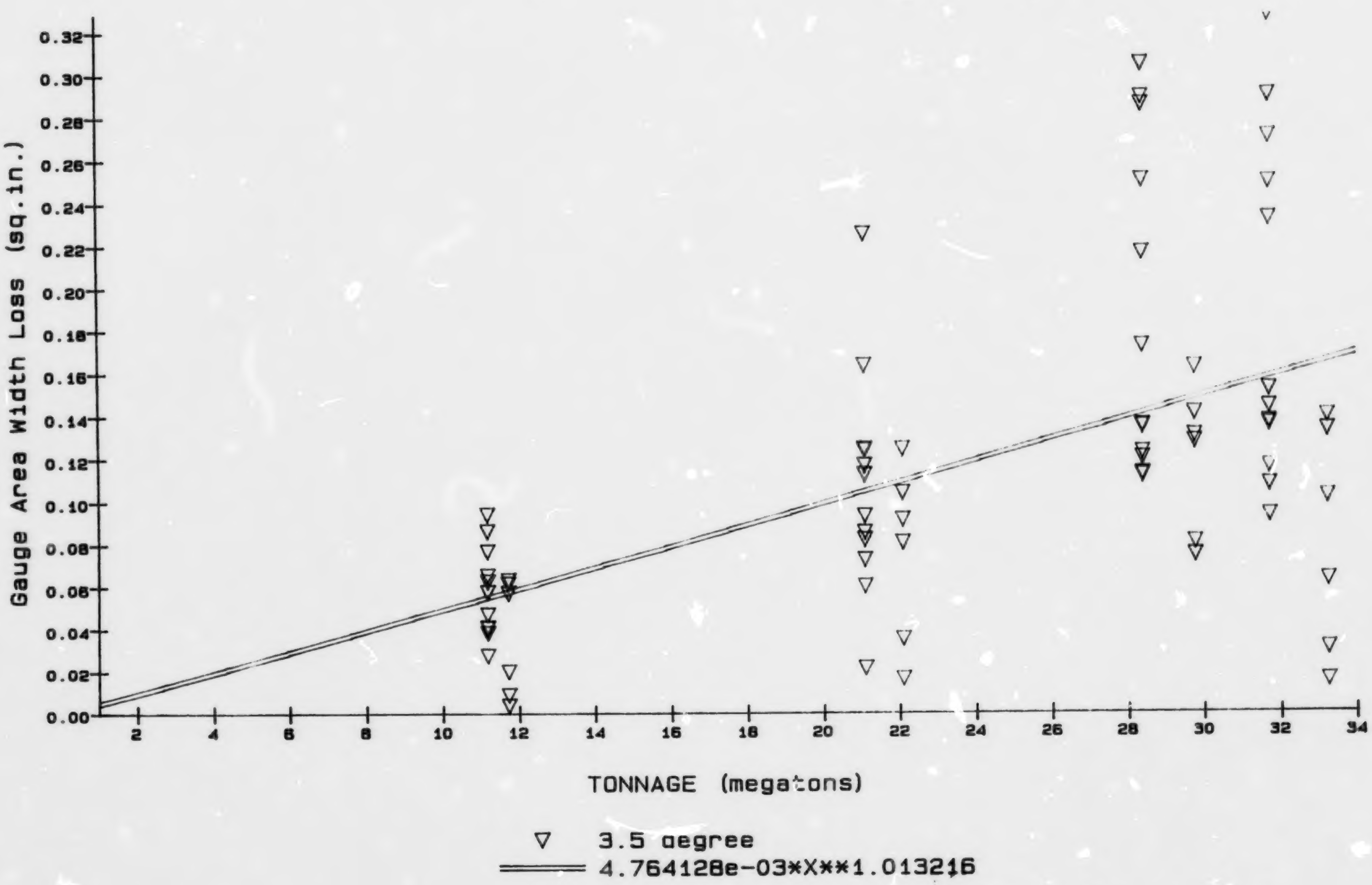
TUMBAREA540 13-DEC-88 11: 09 Page 1

GAUGE AREA LOSS vs TONNAGE . LOW RAIL - 3.5 DEG CURVATURE



TUMBAREA541 13-DEC-88 11: 13 Page 1

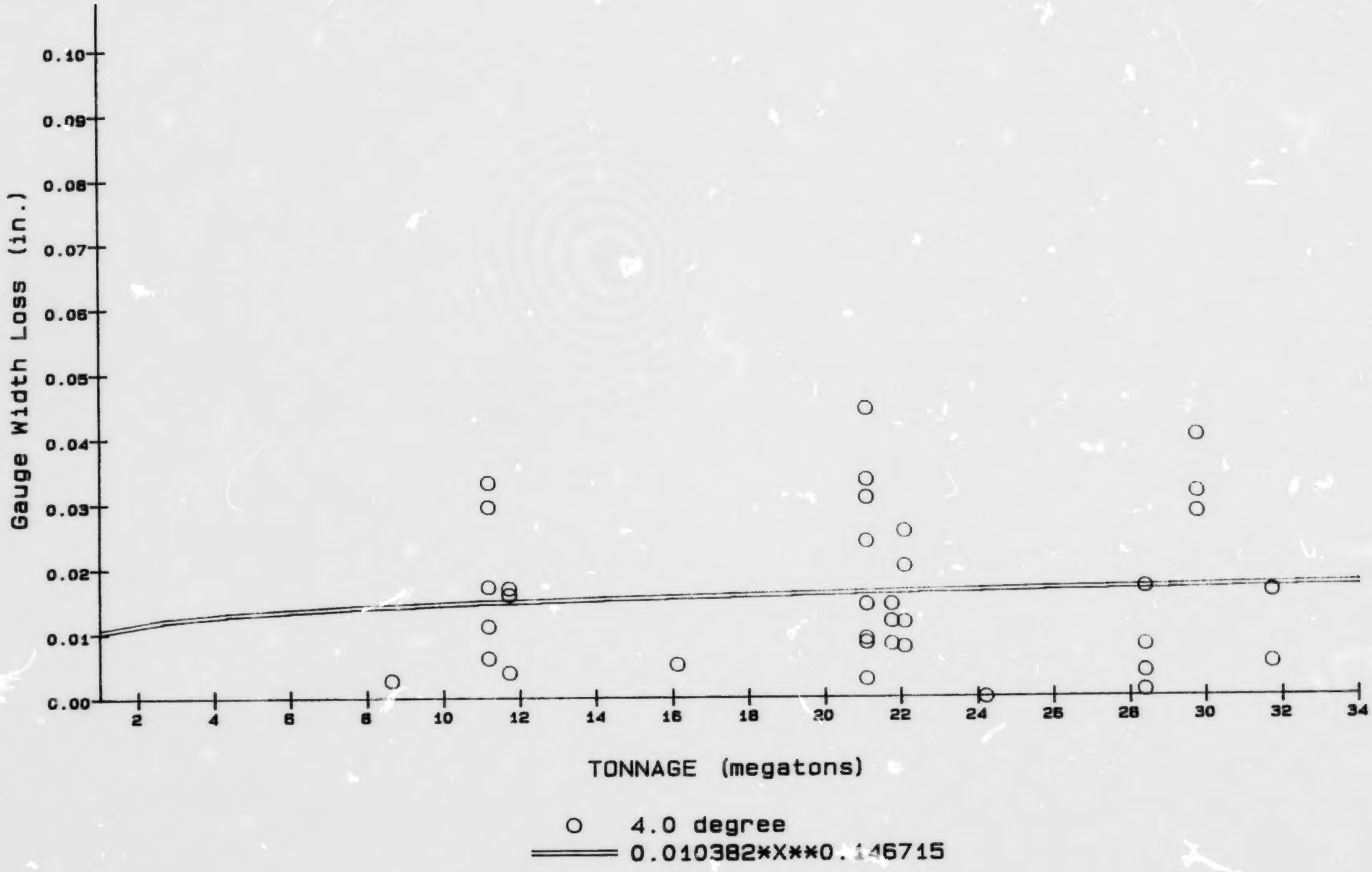
GAUGE AREA LOSS vs TONNAGE . HIGH RAIL - 3.5 DEG CURVATURE



TUMBAREA630

13-DEC-88 11:16 Page 1

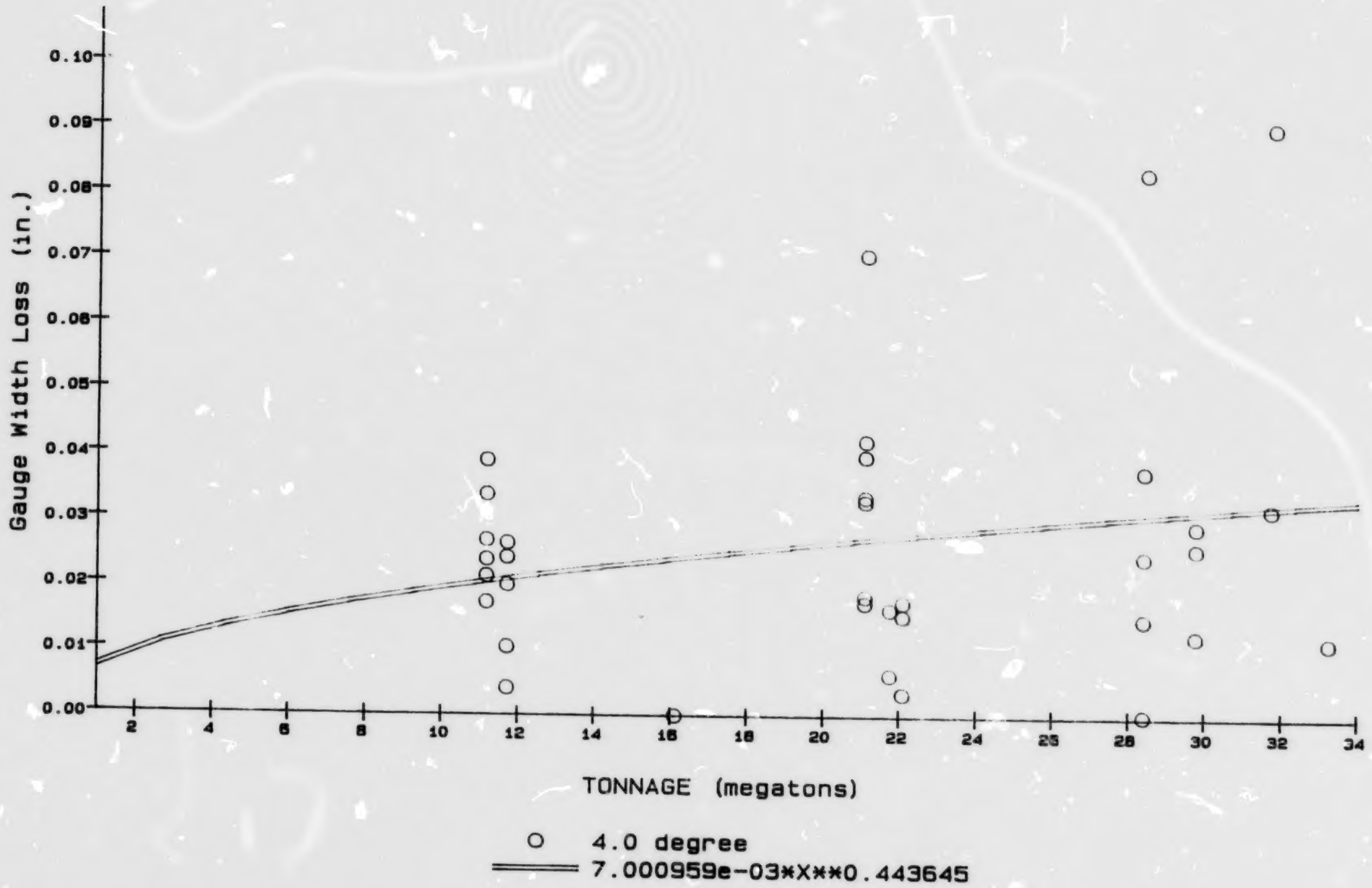
GAUGE WIDTH LOSS vs TONNAGE . LOW RAIL - 4.0 DEG CURVATURE



TUMBAREA631

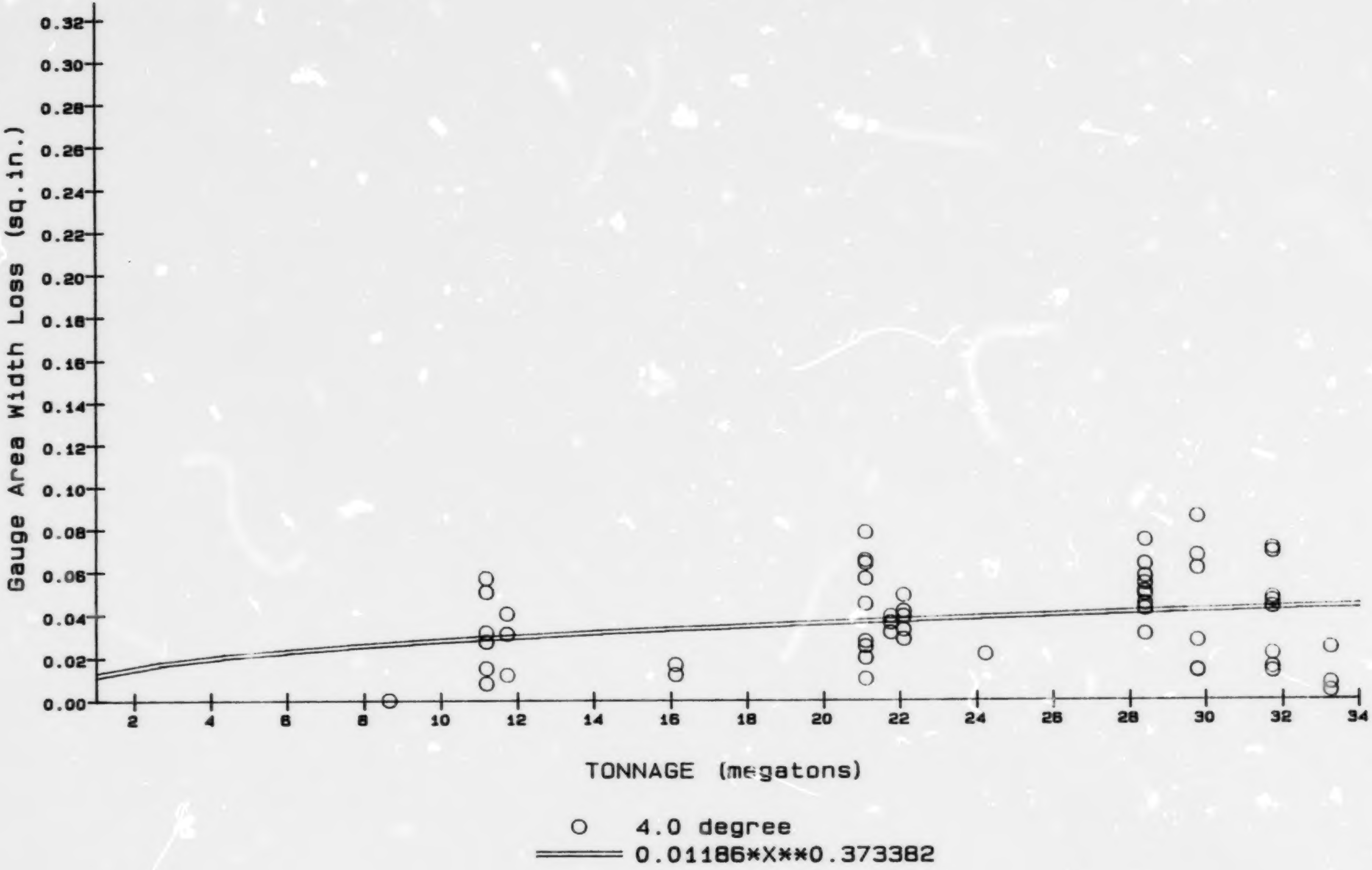
13-DEC-88 11: 20 Page 1

GAUGE WIDTH LOSS vs TONNAGE . HIGH RAIL - 4.0 DEG CURVATURE



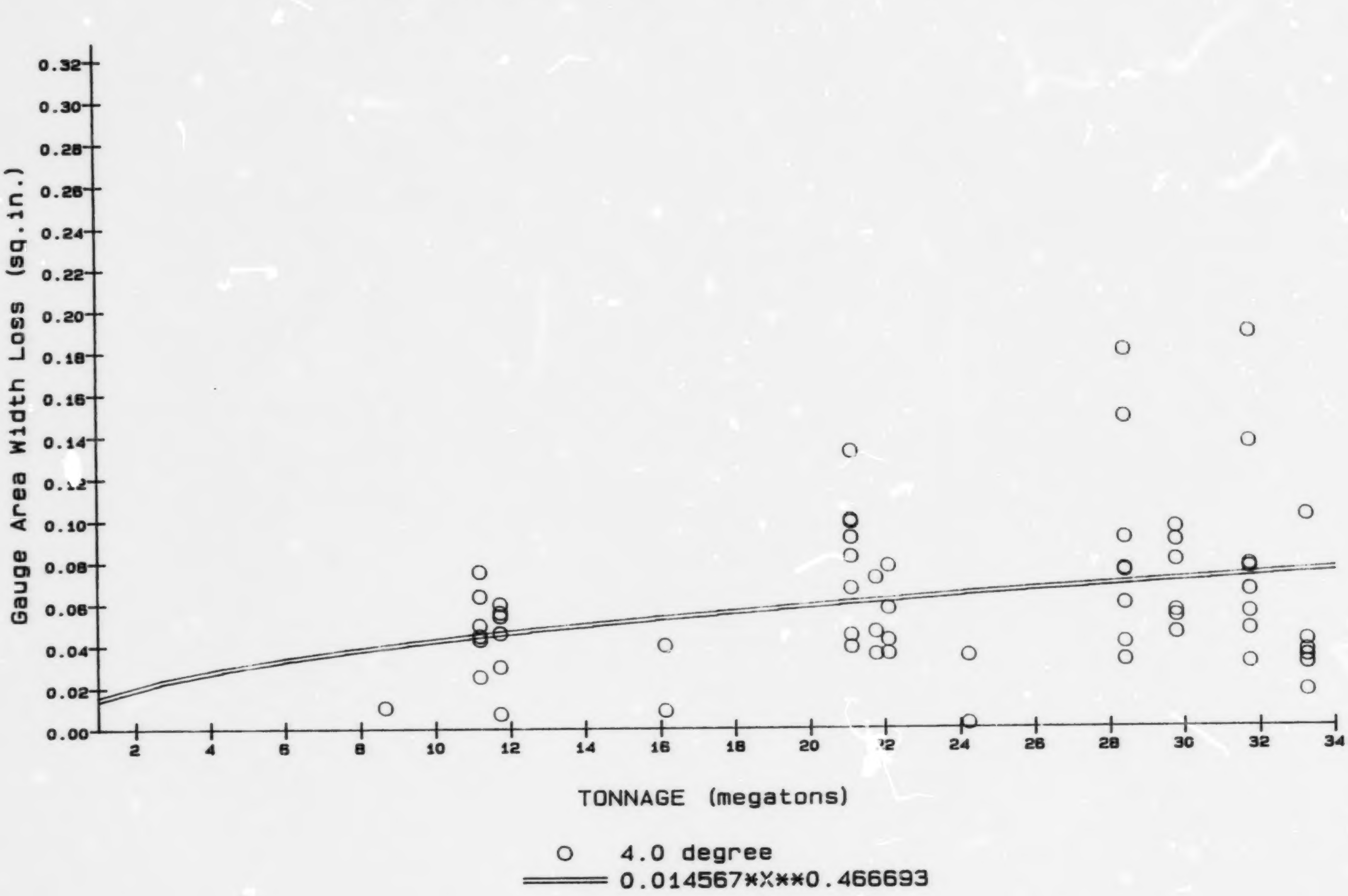
TUMBAREA640 13-DEC-88 11: 24 Page 1

GAUGE AREA LOSS vs TONNAGE , LOW RAIL - 4.0 DEG CURVATURE



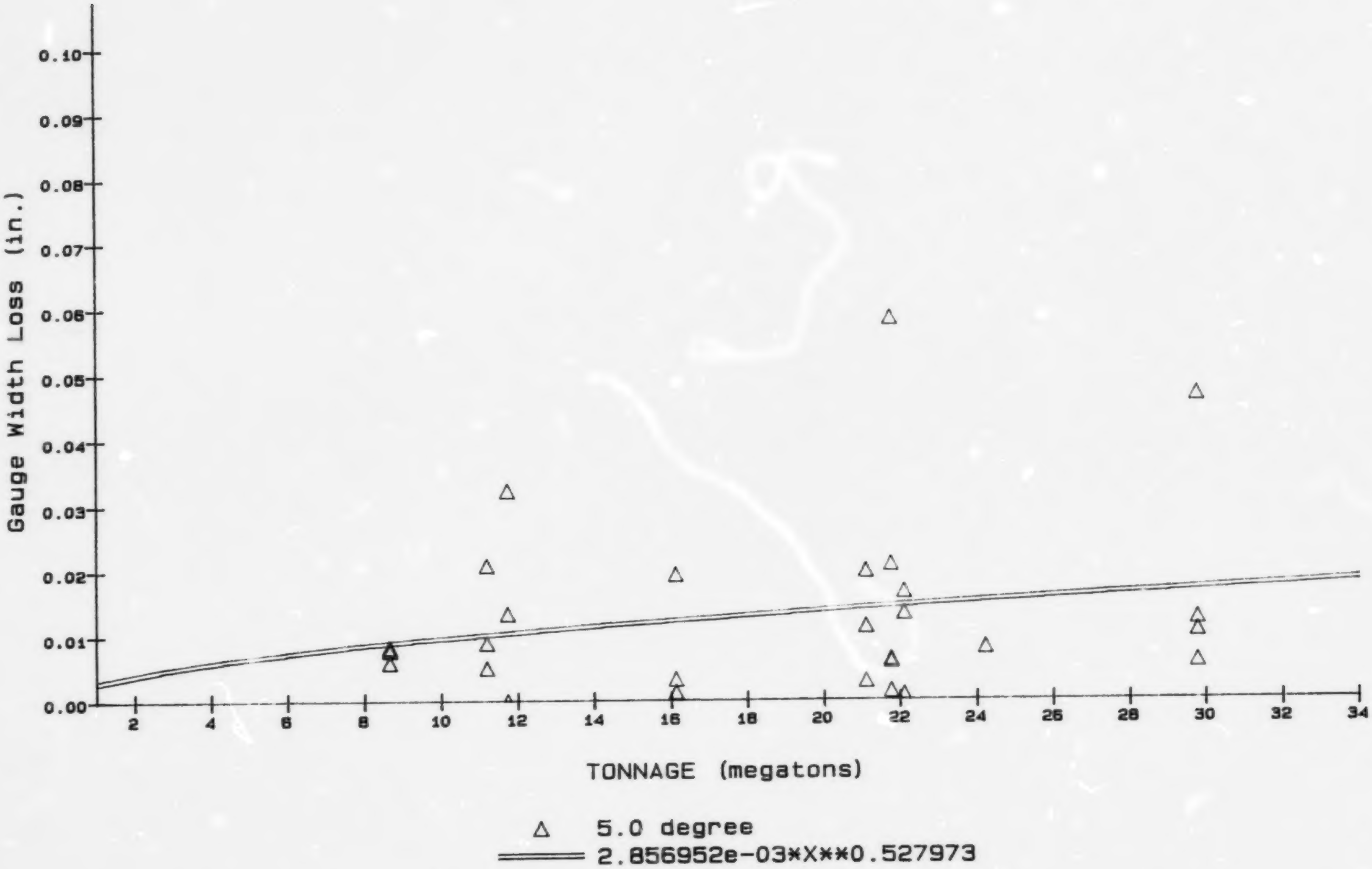
TUMBAREA641 13-DEC-88 11: 28 Page 1

GAUGE AREA LOSS vs TONNAGE . HIGH RAIL - 4.0 DEG CURVATURE



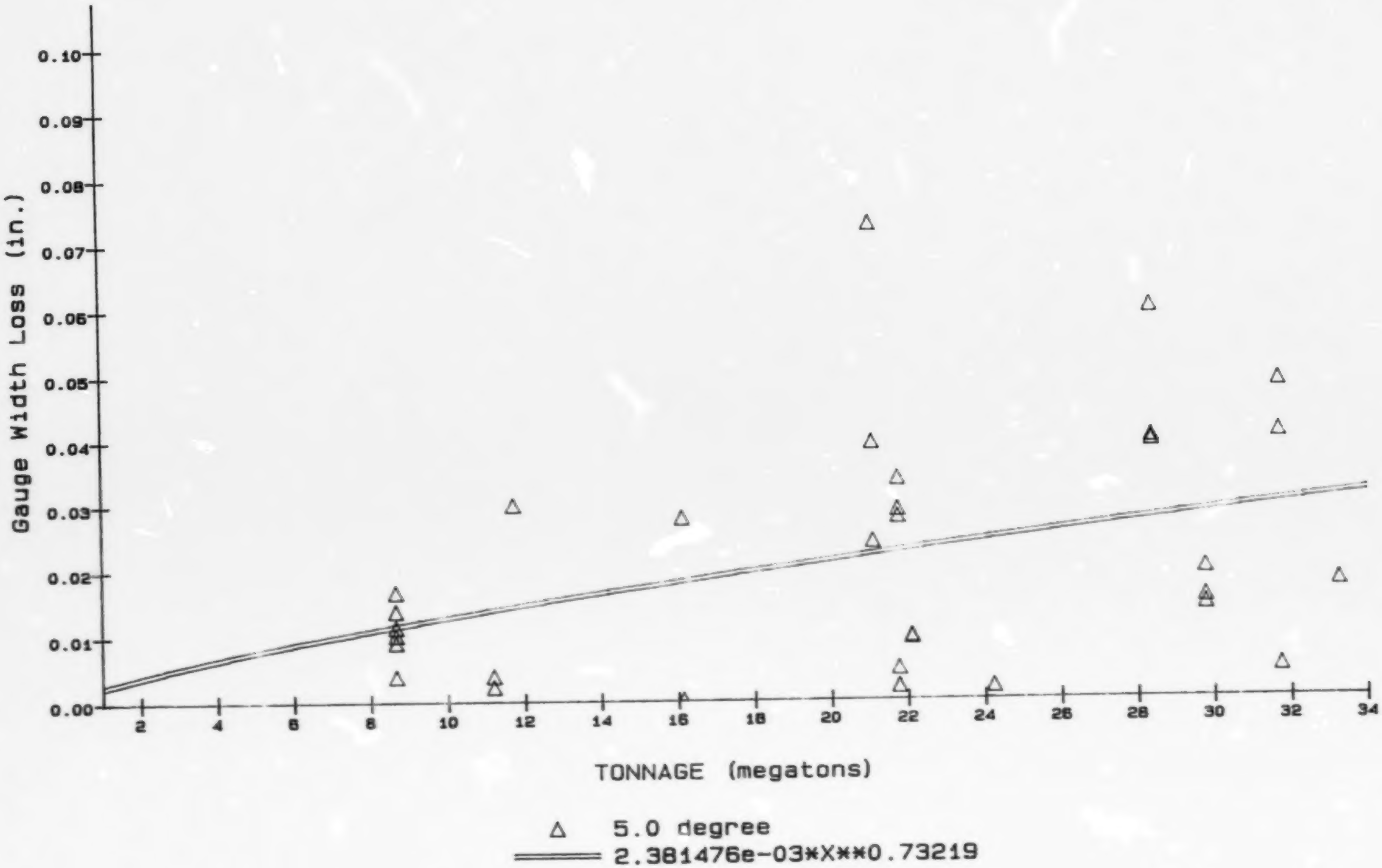
TUMBAREA730 13-DEC-88 11:33 Page 1

GAUGE WIDTH LOSS vs TONNAGE . LOW RAIL - 5.0 DEG CURVATURE



TUMBAREA731 13-DEC-88 11: 36 Page 1

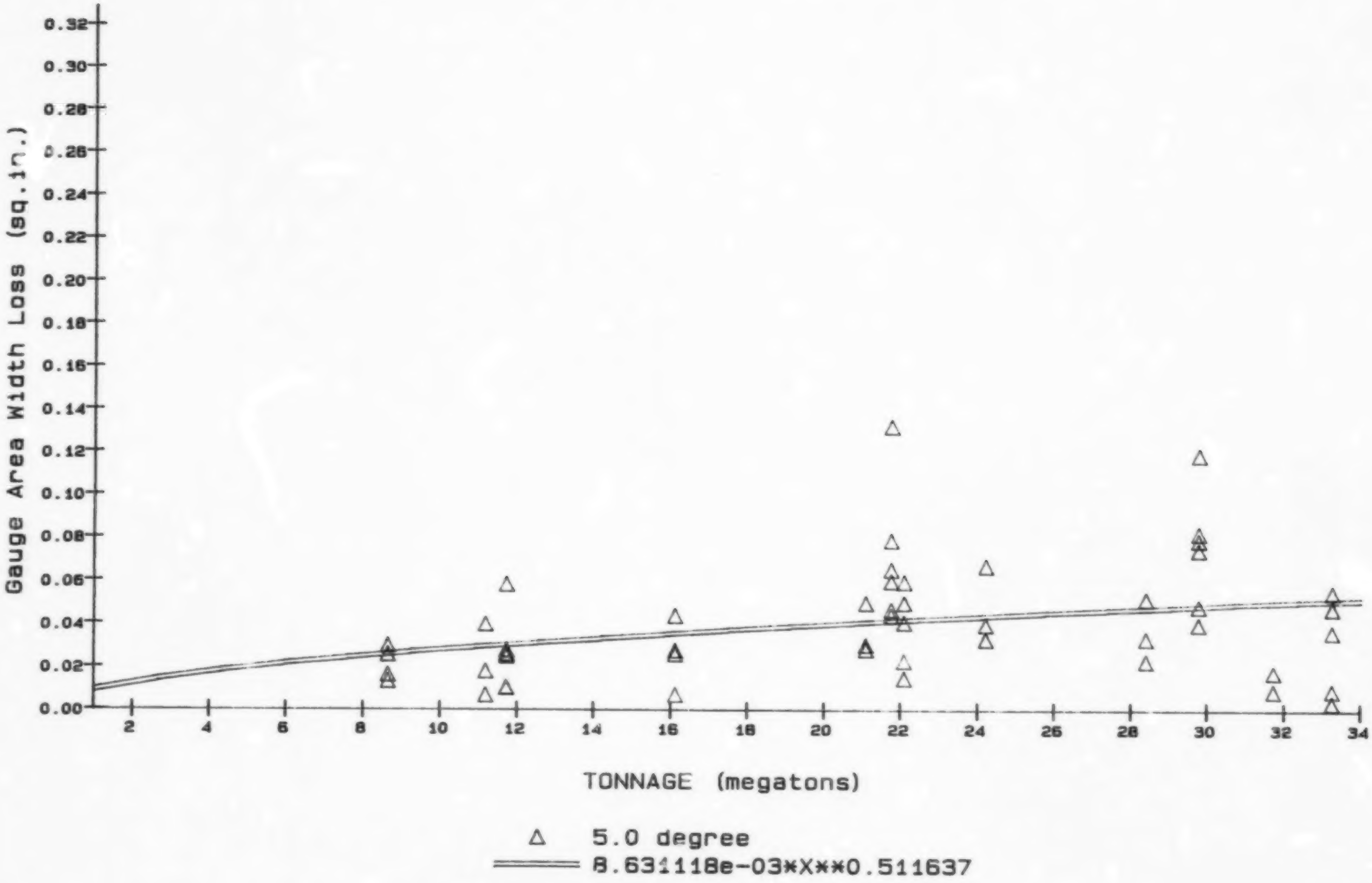
GAUGE WIDTH LOSS vs TONNAGE . HIGH RAIL - 5.0 DEG CURVATURE



TUMBAREA740

13-DEC-88 11:39 Page 1

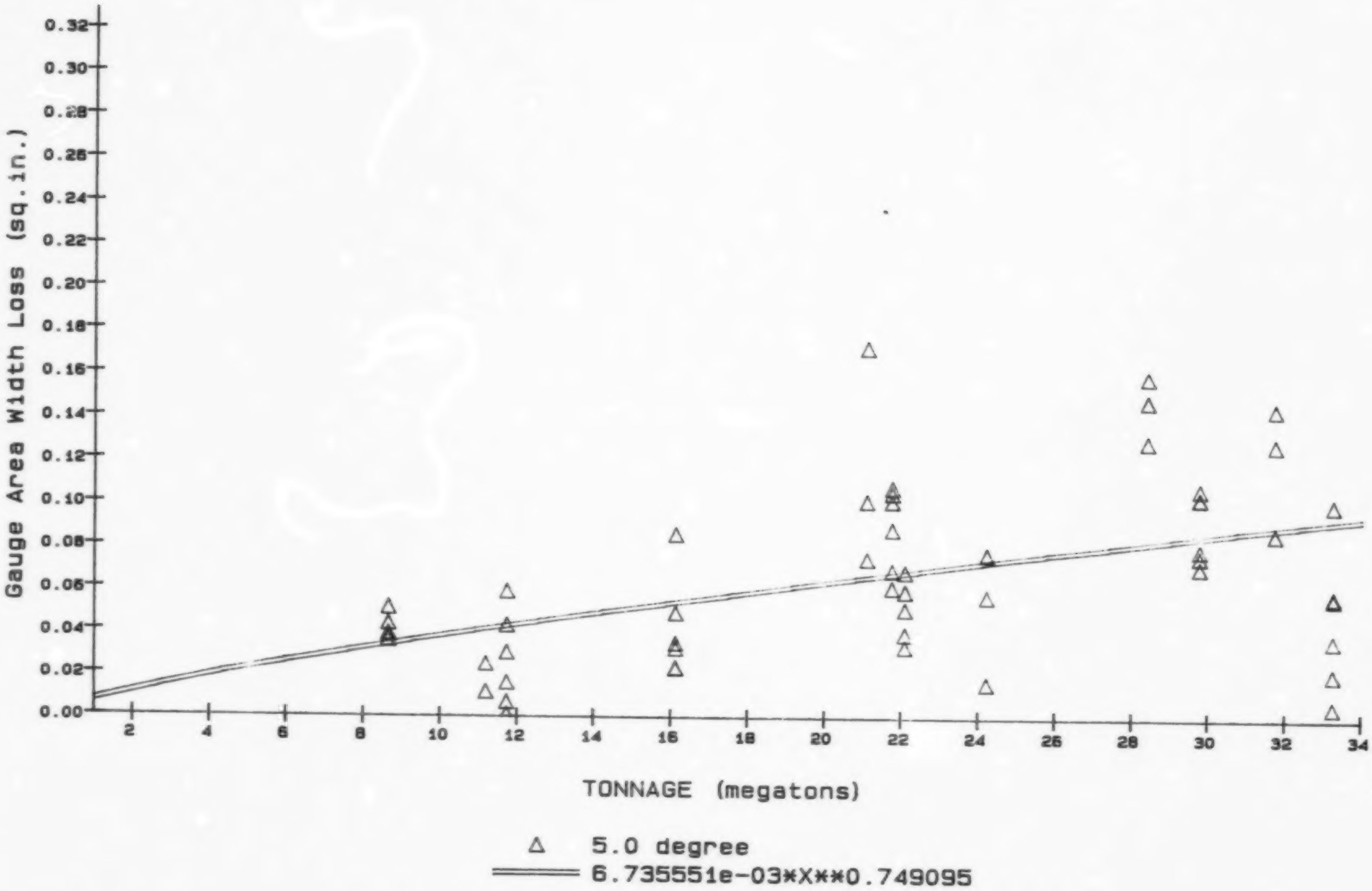
GAUGE AREA LOSS vs TONNAGE . LOW RAIL - 5.0 DEG CURVATURE



TUMBAREA741

13-DEC-88 11: 42 Page 1

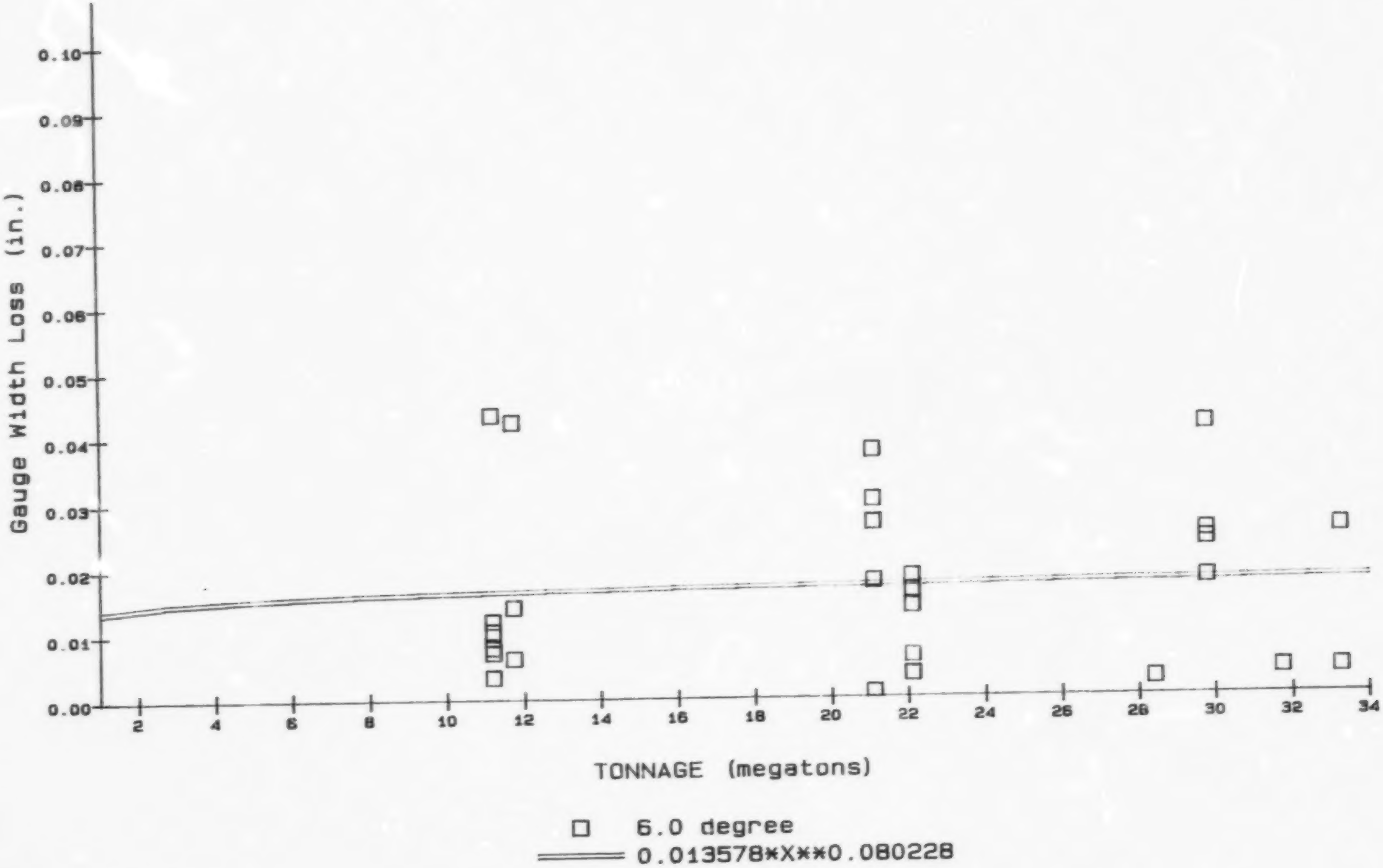
GAUGE AREA LOSS vs TONNAGE . HIGH RAIL - 5.0 DEG CURVATURE



TUMBAREA830

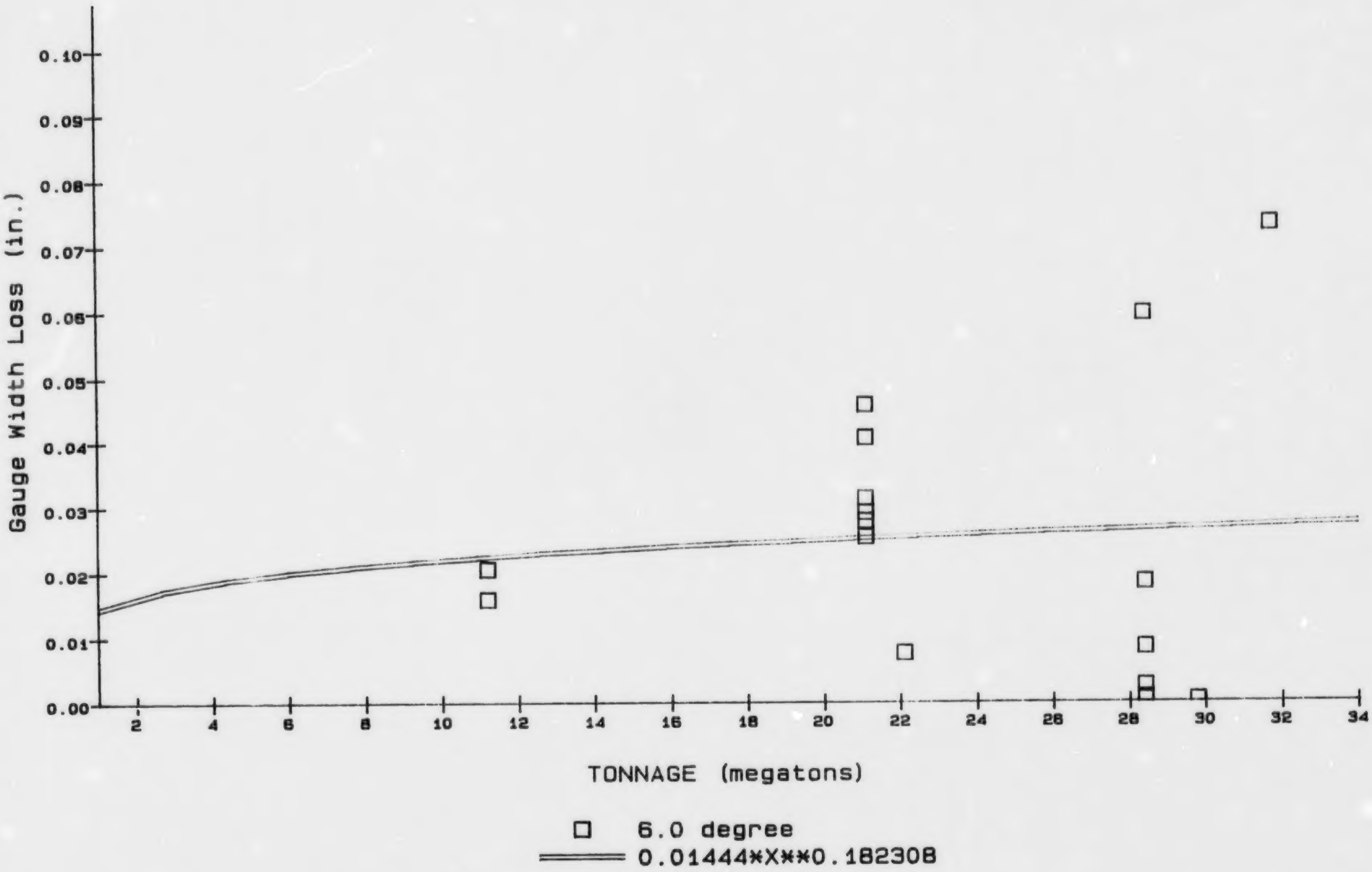
13-DEC-88 11: 48 Page 1

GAUGE WIDTH LOSS vs TONNAGE . LOW RAIL - 6.0 DEG CURVATURE



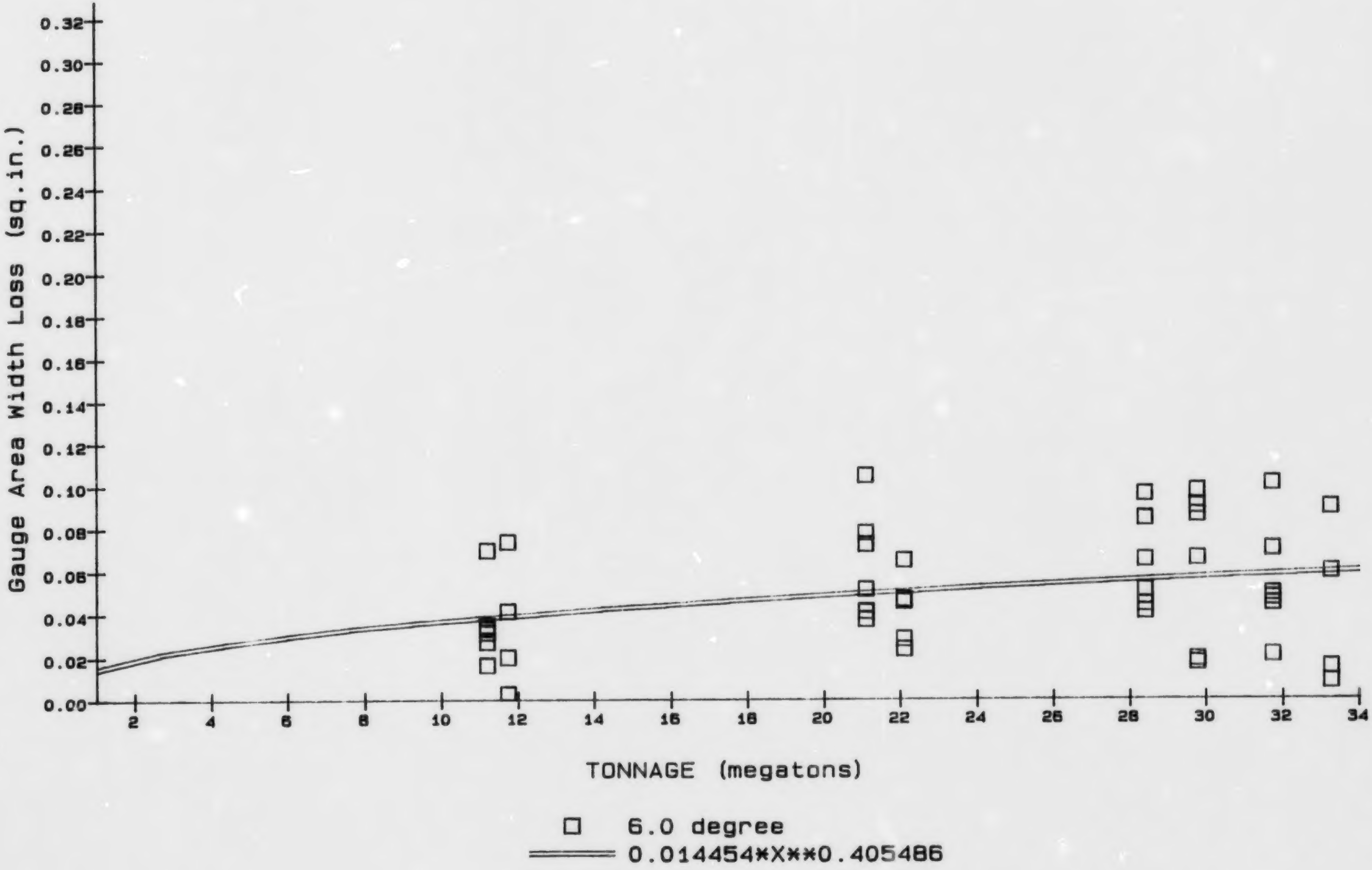
TUMBAREA831 13-DEC-88 11:51 Page 1

GAUGE WIDTH LOSS vs TONNAGE , HIGH RAIL - 6.0 DEG CURVATURE



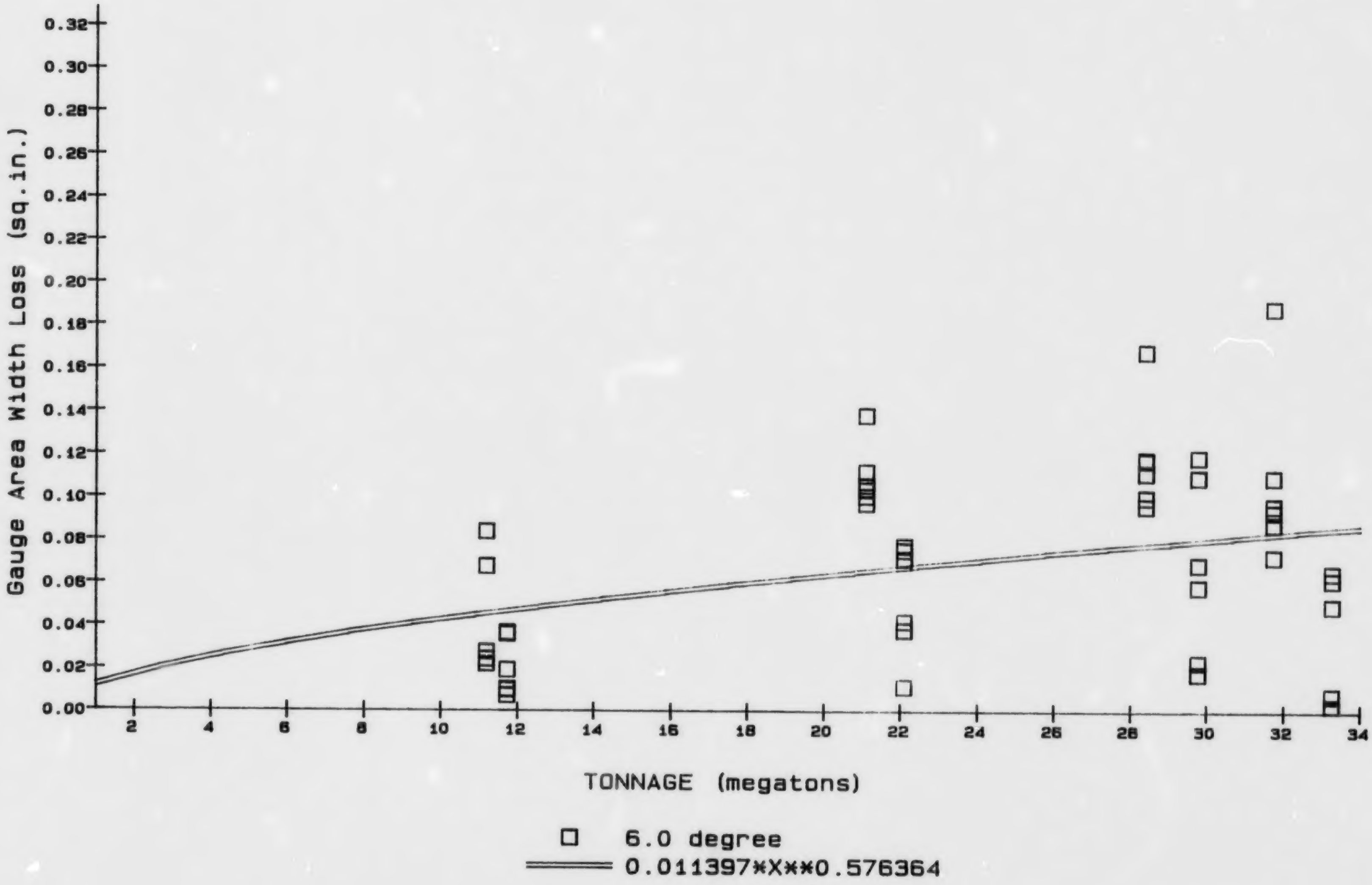
TUMBAREA840 13-DEC-88 11:54 Page 1

GAUGE AREA LOSS vs TONNAGE . LOW RAIL - 6.0 DEG CURVATURE



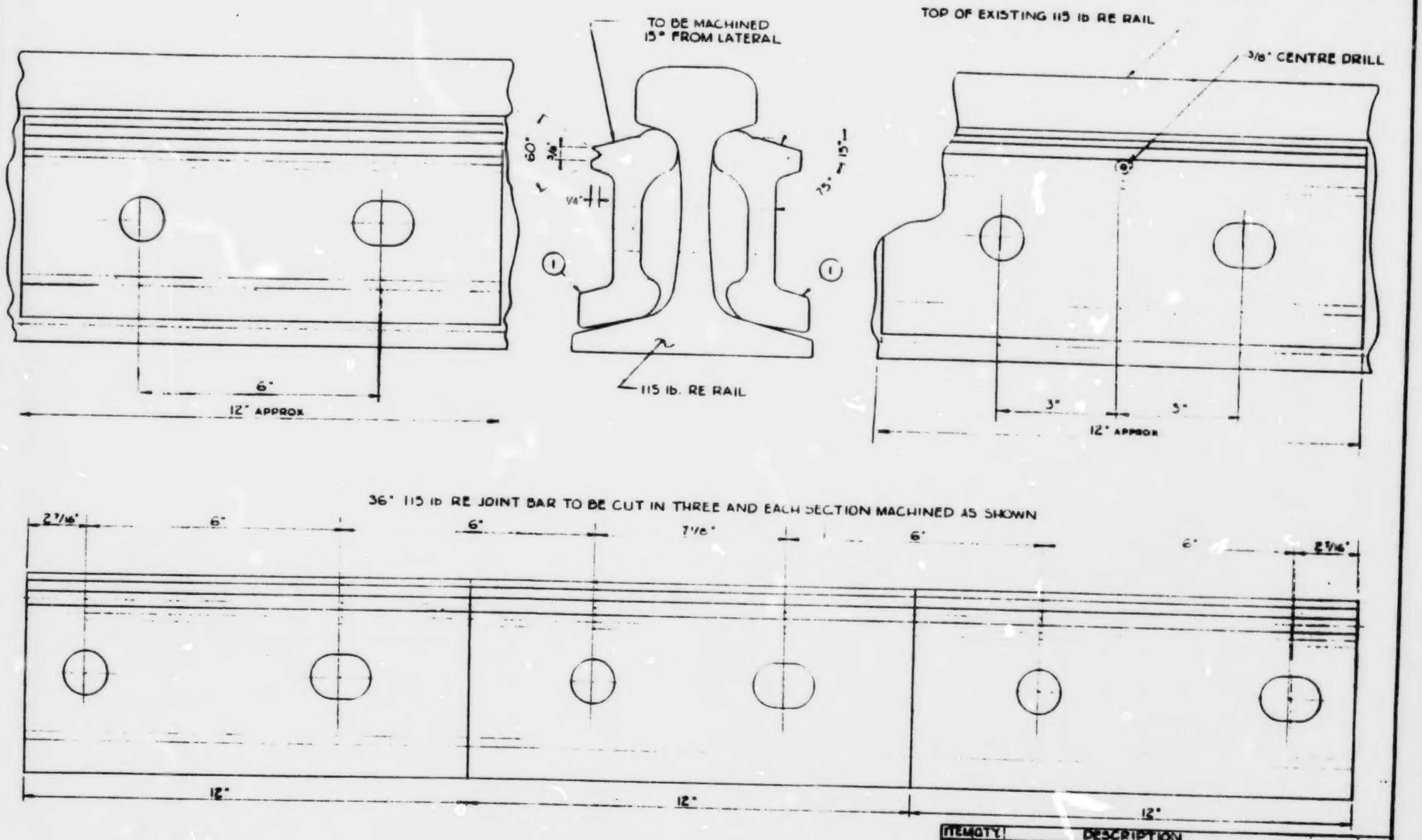
TUMBAREA841 13-DEC-88 11: 57 Page 1

GAUGE AREA LOSS vs TONNAGE . HIGH RAIL - 6.0 DEG CURVATURE



APPENDIX D

BC RAIL DRAWING A2/16-23855
MODIFIED JOINT BARS


TO BE MACHINED
15° FROM LATERAL
TOP OF EXISTING 115 lb RE RAIL
3/8" CENTRE DRILL
60°
3/8"
1/4"
75°
15°
①
①
115 lb. RE RAIL
6"
12" APPROX
3"
3"
12" APPROX
36" 115 lb RE JOINT BAR TO BE CUT IN THREE AND EACH SECTION MACHINED AS SHOWN
2 7/16"
6"
6"
7 1/8"
6"
6"
2 7/16"
12"
12"
12"

115 lb RE JOINT BAR

ITEM	QTY.	DESCRIPTION
1	2	12" HEADFREE 115 lb RAIL JOINT BAR
2	2	1" TRACKBOLT & NUT

BC RAIL
ENGINEERING DEPARTMENT

DCI
L.D
85/07/30

MODIFIED JOINT BARS
TO MEASURE RAIL PROFILE (115 lb)

N.T.S
84-12-19
A2/16-23855
1 of 1

APPENDIX E

BC RAIL
RAIL GRINDING RECORDS
TUMBLER SUB.

JUNE 1986 to MAY 1988

BCRAIL

RAIL GRINDER DAILY REPORT

DATE: June 24 /86

UNIT #: B.C. Rail

AREA: Tacheeda

SUBDIVISION: Tumbler

	TIME IN MINS
1. Total Time Grinding	485
2. Travel to and from Job	30
3. Train Delay	115
4. Change Location	90
5. Other Delay*	115
6. Machine Delay*	
7. Stone Delay	55
8. Servicing Time	120
9. Total Time	1010

*EXPLANATION: #5 watering

OTHER COMMENTS:

PROCESSED
JUL 22 1986
BY

WORK PERFORMED:

TRACK NUMBER	CURVE NUMBER	BEGINNING MILEPOST	ENDING MILEPOST	TRACK MILES	NUMBER OF PASSES	PASS MILES
		3.6	3.9	.3	2	.6
		4.6	5.0	.4	2	.8
		5.1	5.8	.7	2	1.4
		6.2	6.4	.2	2	.4
		6.9	7.3	.4	2	.8
		7.7	8.1	.4	2	.8
		8.2	9.2	1.0	2	2.0
		1.6	1.8	.2	2	.4
		0.0	0.4	.4	2	.8
		0.0	9.2	9.2	1	9.2
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.

TOTAL TRACK MILES 9.2

TOTAL PASS MILES 17.2

WHITE - SR. TRACK MAINT. ENG.
BLUE - TRACK MAINT. ENG.

YELLOW - RAIL GRINDING SUPVR.
PINK - RAIL GRINDING FOREMAN

APPROVED: R Aspinall
FOREMAN

DATE: June 25/86

SUPERVISOR

DATE: June 25/86

BCRAIL

RAIL GRINDER DAILY REPORT

DATE: July 2/86
UNIT #: Rail Grinder Machine #1
AREA: Table
SUBDIVISION: Tumbler

	TIME IN MINS
1. Total Time Grinding	370
2. Travel to and from Job	
3. Train Delay	
4. Change Location	45
5. Other Delay*	70
6. Machine Delay*	
7. Stone Delay	80
8. Servicing Time	335
9. Total Time	900

*EXPLANATION: #5 warm up and changing engine belts on engine #2

OTHER COMMENTS:
95 mins watering added to servicing

WORK PERFORMED:

TRACK NUMBER	CURVE NUMBER	BEGINNING MILEPOST	ENDING MILEPOST	TRACK MILES	NUMBER OF PASSES	PASS MILES
		9.2	17.8	8.6	one	8.6
		11.3	11.6	.3	Two	.6
		14.1	14.8	.7	two	1.4
		14.9	15.5	.6	Two	1.2

PROCESSED
JUL 2[illegible] 1986
BY

TOTAL TRACK MILES 8.6 ~~10.2~~
TOTAL PASS MILES 11.8

WHITE - SR. TRACK MAINT. ENG.
BLUE - TRACK MAINT. ENG.
YELLOW - RAIL GRINDING SUPVR.
PINK - RAIL GRINDING FOREMAN

APPROVED: FOREMAN DATE: July 2/86 SUPERVISOR DATE: July 2/86

BCRAIL

RAIL GRINDER DAILY REPORT

DATE: July 3/86
UNIT #: RGM #1
AREA: Tacheeda
SUBDIVISION: Tumbler

	TIME IN MINS
1. Total Time Grinding	210
2. Travel to and from Job	
3. Train Delay	85
4. Change Location	185
5. Other Delay*	25
6. Machine Delay*	115
7. Stone Delay	25
8. Servicing Time	135
9. Total Time	780

*EXPLANATION: #5 machine warm up
#6 110 min for travel to table and wait for EP and 5 min to push reset on roof

Not machine Profiling

OTHER COMMENTS:

WORK PERFORMED:

TRACK NUMBER	CURVE NUMBER	BEGINNING MILEPOST	ENDING MILEPOST	TRACK MILES	NUMBER OF PASSES	PASS MILES
		17.6	21.5	3.9	one	3.9
		17.6	17.9	.3	two	.6
		19.8	20.2	.5	two	1.0
		5.8	5.1	.3	one	.3
		1.8	1.4	.4	two	.8
						6.6

PROCESSED
JUL 22
BY

TOTAL TRACK MILES 3.9
TOTAL PASS MILES 6.6

WHITE - SR. TRACK MAINT. ENG.
BLUE - TRACK MAINT. ENG.
YELLOW - RAIL GRINDING SUPVR.
PINK - RAIL GRINDING FOREMAN

APPROVED: R Aspinall
FOREMAN
DATE: July 3/86
SUPERVISOR
DATE: July 7 86

BCRAIL

RAIL GRINDER DAILY REPORT

DATE: July 4/86
UNIT #: BGM # 2
AREA: Tackrader
SUBDIVISION: Tumbler

		TIME IN MINS
1.	Total Time Grinding	245
2.	Travel to and from Job	
3.	Train Delay	100
4.	Change Location	210
5.	Other Delay*	45
6.	Machine Delay*	
7.	Stone Delay	20
8.	Servicing Time	90
9.	Total Time	710

*EXPLANATION: #5 30 min [illegible] up and 15 min wait for O.C.S crew

OTHER COMMENTS: 27.9 to 27.2 pattern 2,5 and 1
28.0 to 28.3 pattern 3 and 5

WORK PERFORMED:

TRACK NUMBER	CURVE NUMBER	BEGINNING MILEPOST	ENDING MILEPOST	TRACK MILES	NUMBER OF PASSES	PASS MILES
		21.5	28.3	6.8	one	6.8
		27.9	27.2	.7	Two	1.4
		28.0	28.3	.3	one	.3

TOTAL TRACK MILES 6.8
TOTAL PASS MILES 8.5

WHITE - SR. TRACK MAINT. ENG.
BLUE - TRACK MAINT. ENG.
YELLOW - RAIL GRINDING SUPVR.
PINK - RAIL GRINDING FOREMAN

APPROVED: FOREMAN DATE: July 4/86 SUPERVISOR DATE: July 7 86

BCRAIL

RAIL GRINDER DAILY REPORT

DATE: July 7/86
UNIT #: BGM #1
AREA: Tacheeda
SUBDIVISION: Tumbler

	TIME IN MINS
1. Total Time Grinding	230
2. Travel to and from Job	
3. Train Delay	145
4. Change Location	245
5. Other Delay*	35
6. Machine Delay*	205
7. Stone Delay	50
8. Servicing Time	90
9. Total Time	1050

*EXPLANATION: #5 warm up
#6 A.C. problem with
SCR had to cool down
before travel possible

OTHER COMMENTS:

WORK PERFORMED:

TRACK NUMBER	CURVE NUMBER	BEGINNING MILEPOST	ENDING MILEPOST	TRACK MILES	NUMBER OF PASSES	PASS MILES
		28.3	36.3	8.0	one	8.0
		28.3	28.5	0.2	Two	0.4
		33.5	34.0	0.5	Two	1.0

TOTAL TRACK MILES 8.5
TOTAL PASS MILES 9.4

WHITE - SR. TRACK MAINT. ENG.
BLUE - TRACK MAINT. ENG.
YELLOW - RAIL GRINDING SUPVR.
PINK - RAIL GRINDING FOREMAN

APPROVED: FOREMAN DATE: July 8/86

SUPERVISOR DATE: July 9/86

BCRAIL

RAIL GRINDER DAILY REPORT

DATE: July 9/86
UNIT #: RGM #1
AREA: [illegible]
SUBDIVISION: Tumbler

	TIME IN MINS
1. Total Time Grinding	125
2. Travel to and from Job	
3. Train Delay	20
4. Change Location	300
5. Other Delay*	80
6. Machine Delay*	110
7. Stone Delay	
8. Servicing Time	175
9. Total Time	810

*EXPLANATION: #5 watering up
#6 Blow out SCR room
and travel contactors checked
Blower failure and Main
CB trip

OTHER COMMENTS:

WORK PERFORMED:

TRACK NUMBER	CURVE NUMBER	BEGINNING MILEPOST	ENDING MILEPOST	TRACK MILES	NUMBER OF PASSES	PASS MILES
		36.3	40.4	4.0	one	4.0
pattern 3,5,	3 and 1	39.7	39.9	.2	Three	.6
" 2,5,	1 and 1	40.1	40.4	.3	Three	.9

TOTAL TRACK MILES 4.0
TOTAL PASS MILES 5.5

WHITE - SR. TRACK MAINT. ENG.
BLUE - TRACK MAINT. ENG.
YELLOW - RAIL GRINDING SUPVR.
PINK - RAIL GRINDING FOREMAN

APPROVED: FOREMAN DATE: 86/07/09
SUPERVISOR DATE: July 11/86

BCRAIL

RAIL GRINDER DAILY REPORT

DATE: July 10/86
UNIT #: BC RG #1
AREA: Tacheeda
SUBDIVISION: Tumbler

	TIME IN MINS
1. Total Time Grinding	275
2. Travel to and from Job	
3. Train Delay	
4. Change Location	335
5. Other Delay*	35
6. Machine Delay*	
7. Stone Delay	40
8. Servicing Time	60
9. Total Time	745

*EXPLANATION: #5 warm up Tigthen fan belts engine #1

OTHER COMMENTS:

WORK PERFORMED:

TRACK NUMBER	CURVE NUMBER	BEGINNING MILEPOST	ENDING MILEPOST	TRACK MILES	NUMBER OF PASSES	PASS MILES
		40.4	47.3	6.9	one	6.9
		40.5	41.6	1.1	Two	2.2
		41.6	41.8	.2	four	.8
		42.4	42.8	.4	Two	.8
		43.1	43.5	.4	Two	.8

TOTAL TRACK MILES 6.9

TOTAL PASS MILES 11.6

WHITE - SR. TRACK MAINT. ENG. YELLOW - RAIL GRINDING SUPVR.
BLUE - TRACK MAINT. ENG. PINK - RAIL GRINDING FOREMAN

APPROVED: R Aspinall
FOREMAN

DATE: July 10/86

SUPERVISOR

DATE: July 11/86

BCRAIL

RAIL GRINDER DAILY REPORT

DATE: July 15 1986
UNIT #: Rail Grinder Machine #1
AREA: Teck
SUBDIVISION: Tumbler

	TIME IN MINS
1. Total Time Grinding	365 ✓
2. Travel to and from Job	
3. Train Delay	160 ✓
4. Change Location	175 ✓
5. Other Delay*	65
6. Machine Delay*	
7. Stone Delay	25 ✓
8. Servicing Time	60 ✓
9. Total Time	850

*EXPLANATION: #5 machine warm up and loading stones

OTHER COMMENTS: Unable to get E.P. Servicing time low

WORK PERFORMED:

TRACK NUMBER	CURVE NUMBER	BEGINNING MILEPOST	ENDING MILEPOST	TRACK MILES	NUMBER OF PASSES	PASS MILES
		47.3	54.3	7.0	one	7.0
		48.6	48.9	.3	two	.6
		49.2	49.6	.4	two	.8
		50.0	50.2	.2	two	.4
		50.9	51.1	.2	two	.4
		51.3	51.7	.4	two	.8
		52.3	52.7	.4	one	.4
		52.7	53.0	.3	two	.6
		53.1	53.7	.6	two	1.2
		53.9	54.3	.4	two	.8

TOTAL TRACK MILES 7.0
TOTAL PASS MILES 13.0

WHITE - SR. TRACK MAINT. ENG.
BLUE - TRACK MAINT. ENG.
YELLOW - RAIL GRINDING SUPVR.
PINK - RAIL GRINDING FOREMAN

APPROVED: FOREMAN DATE: July 15/86

SUPERVISOR DATE: July 21/86

BCRAIL

RAIL GRINDER DAILY REPORT

DATE: June 16/86

UNIT #: RGM #1

AREA: Track

SUBDIVISION: Tumbler

		TIME IN MINS
1.	Total Time Grinding	560 ✓
2.	Travel to and from Job	20 ✓
3.	Train Delay	80 ✓
4.	Change Location	50 ✓
5.	Other Delay*	
6.	Machine Delay*	
7.	Stone Delay	40 ✓
8.	Servicing Time	75 ✓
9.	Total Time	825

*EXPLANATION:

OTHER COMMENTS: Servicing time short on 15 and 16 will have to make it up on the July 17/86

WORK PERFORMED:

TRACK NUMBER	CURVE NUMBER	BEGINNING MILEPOST	ENDING MILEPOST	TRACK MILES	NUMBER OF PASSES	PASS MILES
		69.6	80.5	10.9	one	10.9
2,5,	(2)	71.9	72.3	.4	two	.8
3,5,	(3)	73.6	73.8	.2	two	.4
3,5,	3	74.1	74.4	.3	two	.6
2,5	2,2	74.5	74.7	.2	three	.6
2,5,	1	75.8	76.0	.2	two	.4
3,5	3,5	76.1	76.4	.3	three	.9
2,5,	(1)	76.7	77.0	.3	two	.6
3,5,	(3)	77.1	77.5	.4	two	.8
2 or 3,	1	79.5	78.0	1.5	one	1.5

TOTAL TRACK MILES 10.9

TOTAL PASS MILES 17.5

WHITE - SR. TRACK MAINT. ENG. YELLOW - RAIL GRINDING SUPVR.

BLUE - TRACK MAINT. ENG. PINK - RAIL GRINDING FOREMAN

APPROVED: R Aspinall
FOREMAN

DATE: July 16/86

SUPERVISOR

DATE: July 21/86

BCRAIL

RAIL GRINDER DAILY REPORT

DATE: July 17/86

UNIT #: R.G.M #1

AREA: Track

SUBDIVISION: Tumbler

	TIME IN MINS
1. Total Time Grinding	95
2. Travel to and from Job	20
3. Train Delay	
4. Change Location	
5. Other Delay*	
6. Machine Delay*	390
7. Stone Delay	
8. Servicing Time	120
9. Total Time	625

*EXPLANATION: # Find problem with SPB 100 and make temp repair

OTHER COMMENTS:

WORK PERFORMED:

TRACK NUMBER	CURVE NUMBER	BEGINNING MILEPOST	ENDING MILEPOST	TRACK MILES	NUMBER OF PASSES	PASS MILES
~~3,5,(3)~~		68.0	69.6	1.6	one	1.6
3,5,(3)		69.0	69.3	.3	two	.6
2,3,5,1		68.0	68.7	.7	two	1.4
2,5		69.3	69.6	.3	one	.3

TOTAL TRACK MILES 1.6

TOTAL PASS MILES 3.9

WHITE - SR. TRACK MAINT. ENG.
BLUE - TRACK MAINT. ENG.

YELLOW - RAIL GRINDING SUPVR.
PINK - RAIL GRINDING FOREMAN

APPROVED: R. Brainall
FOREMAN

DATE:

SUPERVISOR

DATE: July 21/86

BCRAIL

RAIL GRINDER DAILY REPORT

DATE: July 18/86
UNIT #: B.G.M. #1
AREA: Teck loop
SUBDIVISION: Tumbler

	TIME IN MINS
1. Total Time Grinding	225 ✓
2. Travel to and from Job	25 ✓
3. Train Delay	95 ✓
4. Change Location	
5. Other Delay*	
6. Machine Delay*	
7. Stone Delay	15
8. Servicing Time	180
9. Total Time	540

*EXPLANATION:

OTHER COMMENTS:

WORK PERFORMED:

TRACK NUMBER	CURVE NUMBER	BEGINNING MILEPOST	ENDING MILEPOST	TRACK MILES	NUMBER OF PASSES	PASS MILES
		68.0	64.7	3.3	one	3.3
5(3)		69.3	69.0	.3	two	.6
5,2	13	68.0	68.7	.7	two	1.4
2,5,1		67.5	67.8	.3	two	.6
3,5,3		67.0	67.4	.4	two	.8
2,2		66.6	66.1	.5	one	.5

TOTAL TRACK MILES 4.3

TOTAL PASS MILES 7.2

WHITE - SR. TRACK MAINT. ENG.
BLUE - TRACK MAINT. ENG.
YELLOW - RAIL GRINDING SUPVR.
PINK - RAIL GRINDING FOREMAN

APPROVED: R Aspinall
FOREMAN

DATE: July 18/86

SUPERVISOR

DATE: July 21/86

BCRAIL

RAIL GRINDER DAILY REPORT

DATE: July 22/86
UNIT #: R.G.M #1
AREA: Teck
SUBDIVISION: Tumbler

		TIME IN MINS
1.	Total Time Grinding	475 ✓
2.	Travel to and from Job	25 ✓
3.	Train Delay	50 ✓
4.	Change Location	45 ✓
5.	Other Delay*	40 ✓
6.	Machine Delay*	
7.	Stone Delay	40 ✓
8.	Servicing Time	90 ✓
9.	Total Time	765

*EXPLANATION: #5 warm up and wye machine

OTHER COMMENTS:

WORK PERFORMED:

TRACK NUMBER	CURVE NUMBER	BEGINNING MILEPOST	ENDING MILEPOST	TRACK MILES	NUMBER OF PASSES	PASS MILES
		64.7	57.8	6.7	one	6.7
5,3		65.6	64.7	.9	Two	1.8
2,2		63.9	64.3	.4	one	.4
5,5,3,1,3		63.8	63.5	.3	four	1.2
2,2		62.3	61.6	.7	one	.7
2,5,2		60.9	60.7	.2	Two	.4
2,5,5,2		59.8	59.5	.3	Three	.9
3,5,5,2		59.3	59.0	.3	three	1.8
2,5,2		59.0	58.7	.3	two	.6
3,5,3		58.6	58.3	.3	Two	.6
5,1,1,2		58.1	57.8	.3	three	.9
				6.7		16.0
			TOTAL TRACK MILES		TOTAL PASS MILES	

WHITE - SR. TRACK MAINT. ENG.
BLUE - TRACK MAINT. ENG.

YELLOW - RAIL GRINDING SUPVR.
PINK - RAIL GRINDING FOREMAN

APPROVED: R Aspinall
FOREMAN

DATE:

SUPERVISOR

DATE: July 23/86

BCRAIL

RAIL GRINDER DAILY REPORT

DATE: July 23/86
UNIT #: R.G.M #1
AREA: Tacheeda
SUBDIVISION: Tumbler

	TIME IN MINS
1. Total Time Grinding	310 ✓
2. Travel to and from Job	20 ✓
3. Train Delay	
4. Change Location	220 ✓
✓ 5. Other Delay*	60
6. Machine Delay*	
7. Stone Delay	20 ✓
8. Servicing Time	65 ✓
9. Total Time	695

*EXPLANATION: #5 Train dispatcher delay

OTHER COMMENTS: Will have to finish servicing next morning

WORK PERFORMED:

TRACK NUMBER	CURVE NUMBER	BEGINNING MILEPOST	ENDING MILEPOST	TRACK MILES	NUMBER OF PASSES	PASS MILES
		57.8	54.3	3.8	one	3.8
	3,3	57.7	57.4	.3	one	.3
	5,3,3	57.2	57.3	.1	Two	.2
	2,5,1,2,2	57.1	56.8	.3	four	1.2
	3,5,3	56.6	56.4	.2	Two	.4
	2,2,5,5,1	56.1	56.4	.3	four	1.2
	3,5,1	56.0	55.6	.4	two	.8
	5,5	55.5	55.4	.1	one	.1
	5,3	55.0	55.3	.3	one	.3
	5,3	54.6	54.5	.1	one	.1
	5,2	54.5	54.3	.2	one	.2
	4,4,2	28.[illegible]	28.3	.3	Three	.9
	5,1,1	27.9	27.4	.5	three	1.5
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.

TOTAL TRACK MILES 3.8
TOTAL PASS MILES 11.0

WHITE - SR. TRACK MAINT. ENG. YELLOW - RAIL GRINDING SUPVR.
BLUE - TRACK MAINT. ENG. PINK - RAIL GRINDING FOREMAN

APPROVED: R Aspinall FOREMAN DATE: July 23/86 SUPERVISOR DATE: 7/23/86

BCRAIL

RAIL GRINDER DAILY REPORT

DATE: July 25/86

UNIT #: R.G.M #1

AREA: Tacheeda

SUBDIVISION: Tumbler

		TIME IN MINS
1.	Total Time Grinding	165 ✓
2.	Travel to and from Job	
3.	Train Delay	50 ✓
4.	Change Location	220 ✓
5.	Other Delay*	
6.	Machine Delay*	
7.	Stone Delay	
8.	Servicing Time	130 ✓
9.	Total Time	565

*EXPLANATION:

OTHER COMMENTS:

WORK PERFORMED:

TRACK NUMBER	CURVE NUMBER	BEGINNING MILEPOST	ENDING MILEPOST	TRACK MILES	NUMBER OF PASSES	PASS MILES
5,5,1,1,2		17.5	17.9	.4	five	2.0
3,5,1,(1)	3,(1)	22.2	22.4	.2	six	1.2
5,5,3,1		22.6	23.1	.5	~~Three~~ four	2.0
5,1,1,3		25.2	25.4	.2	four	.8

TOTAL TRACK MILES 1.3

TOTAL PASS MILES 6.0

WHITE - SR. TRACK MAINT. ENG.
BLUE - TRACK MAINT. ENG.

YELLOW - RAIL GRINDING SUPVR.
PINK - RAIL GRINDING FOREMAN

APPROVED: FOREMAN DATE:

SUPERVISOR DATE: 7/25/86

BCRAIL

RAIL GRINDER DAILY REPORT

Date: May 13 1987
Unit No.: RGM #1
Area: Tacheeda
Subdivision: Chetwynd and Tumbler

		Time in Minutes
1.	Total Time Grinding	290
2.	Travel to and from Job	
3.	Train Delay	70
4.	Change Location	30
.	Other Delay *	25
6.	Machine Delay *	
7.	Stone Delay	50
8.	Servicing Time	135
9.	Total Time	600

*Explanation: #5 brake test and warm up

Other Comments: Filled water car

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		532.9	537.6	4.7	1	4.7
		0.0	6.3	6.3	1	6.3
		1.3	1.5	.2	2	.4
		5.1	5.2	.1	1	.1
		5.3	5.5	.2	1	.2
		6.2	6.3	.1	1	.1

Total Track Miles: 11.0
Total Pass Miles: 11.8

Approved by Foreman: R Aspinall
Date: May 14 /87

Approved by Supervisor:
Date: May 18/87

DISTRIBUTION:
1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2456(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: May 14/87
Unit No.: RGM #1
Area: Tech
Subdivision: Tumbler

	Time In Minutes
1. Total Time Grinding	245
2. Travel to and from Job	
3. Train Delay	50
4. Change Location	55
. Other Delay*	
6. Machine Delay*	
7. Stone Delay	40
8. Servicing Time	210
9. Total Time	600

*Explanation:

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
	3,3,3	7.0	7.2	.2	3	.9
	1	7.2	10.8	3.6	1	5.6
	33	10.8	11.1	.3	2	.6
	1	11.1	11.2	.1	1	.1
	33	11.2	11.5	.3	2	.6
	1	11.5	11.7	.2	1	.2
	33	11.7	11.9	.2	2	.4
	1	11.9	14.1	2.2	1	2.2
	2,2	14.1	14.3	.2	2	.4
	3	14.3	14.6	.3	1	.3

Total Track Miles: 7.4
Total Pass Miles: 9.3

Approved by Foreman:
Date: May 14/87

Approved by Supervisor:
Date: MAY 18/87

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2458(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: May 15 /87
Unit No.: RGM #1
Area: Tacheda
Subdivision: Tumbli

	Time in Minutes
1. Total Time Grinding	270
2. Travel to and from Job	
3. Train Delay	45
4. Change Location	130
. Other Delay*	~~[illegible]~~
6. Machine Delay*	
7. Stone Delay	30
8. Servicing Time	185
9. Total Time	660

*Explanation:

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
	1	14.3	14.9	.6	1	.6
	2.2	14.9	15.1	.2	2	.4
	1	15.1	17.9	2.8	1	2.8
	3.3	17.9	17.9	.2	2	.4
	1	17.9	19.3	1.4	1	1.4
	2.2.2	19.3	19.5	3.2	3	.6
		19.5	23.9	4.4	1	4.4

Total Track Miles: 9.6
Total Pass Miles: 10.4

Approved by Foreman:
Date: May 15/87

Approved by Supervisor:
Date: MAY 18/87

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2456(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: May 16/87
Unit No.: RGM #1
Area: Tacheeda
Subdivision: Tumbler

	Time in Minutes
1. Total Time Grinding	205
2. Travel to and from Job	
3. Train Delay	60
4. Change Location	150
. Other Delay*	
6. Machine Delay*	
7. Stone Delay	30
8. Servicing Time	215
9. Total Time	660

*Explanation:

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
	1	23.9	28.2	4.3		4.3
	22	28.2	28.3	.1	2	.2
		28.3	32.8	4.5		4.5
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.

Total Track Miles: 8.9
Total Pass Miles: 9.0

Approved by Foreman:
Date: May 16/87

Approved by Supervisor:
Date: May 18/87

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2456(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: May 17/87

Unit No.: RGM #1

Area: Tacheeda

Subdivision: Tumbler

	Time in Minutes
1. Total Time Grinding	120
2. Travel to and from Job	
3. Train Delay	50
4. Change Location	235
. Other Delay*	
6. Machine Delay*	
7. Stone Delay	
8. Servicing Time	255
9. Total Time	660

*Explanation:

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
	3	27.3	27.4	.1	1	.1
	1	32.8	34.2	1.4	1	1.4
	1	39.6	42.1	2.5	1	2.5

Total Track Miles: 4.0

Total Pass Miles: 4.0

Approved by Foreman:

Date: May 17/87

Approved by Supervisor:

Date: May 18/87

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2456(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: May 26 1987

Unit No.: RGM #1

Area: Teck

Subdivision: Tumbler

	Time in Minutes
1. Total Time Grinding	165
2. Travel to and from Job	30
3. Train Delay	15
4. Change Location	170
. Other Delay*	30
6. Machine Delay*	20
7. Stone Delay	25
8. Servicing Time	185
9. Total Time	660

*Explanation: #5 brake test and warm up
#6 engine #? shut down (over temp) reset and restart

Other Comments: Replaced roto-pulses

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		42.1	42.6	.5	1	.5
		34.1	39.7	5.6	1	5.6
		43.6	47.3	3.7	1	3.7
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.

Total Track Miles: 9.8

Total Pass Miles: 9.8

Approved by Foreman: E. Aspinall

Date: May 27 1987

Approved by Supervisor:

Date: May 29/87

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2456(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: May 28 1987

Unit No.: RGPC #1

Area: Teck

Subdivision: Tumbler

	Time in Minutes
1. Total Time Grinding	245
2. Travel to and from Job	30
3. Train Delay	65
4. Change Location	90
.. Other Delay*	30
6. Machine Delay*	
7. Stone Delay	20
8. Servicing Time	120
9. Total Time	600

*Explanation: #5 brake test and warm up

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		69.6	80.0	10.4	1	10.4
		74.5	74.7	.2	1	.2
		76.3	76.5	.2	1	.2
		76.9	77.1	.2	1	.2
		65.1	60.9	1.2	1	1.2

Total Track Miles: 11.6

Total Pass Miles: 12.2

Approved by Foreman: R.C. Aspinall

Date: May 29 1987

Approved by Supervisor:

Date: May 29/87

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2456(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: May 28 1987

Unit No.: RGM #1

Area: Teck

Subdivision: Tumbler

	Time in Minutes
1. Total Time Grinding	155
2. Travel to and from Job	30
3. Train Delay	15
4. Change Location	
. Other Delay*	30
6. Machine Delay*	345
7. Stone Delay	25
8. Servicing Time	
9. Total Time	600

*Explanation: #5 brake test and warm up
#6 main water pump motor failed

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		69.6	64.8	4.8	1	4.8
		68.6	68.4	.3	1	.3
		69.5	68.8	.3	1	.3
		67.8	67.5	.3	1	.3
		67.4	67.1	.3	1	.3
		66.6	66.2	.4	1	.4

Total Track Miles: 4.8

Total Pass Miles: 6.4

Approved by Foreman:
Date: May 29/87

Approved by Supervisor:
Date: May 29/87

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2456(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: May 29/87
Unit No.: RGM#1
Area: Teck
Subdivision: Tumbler

	Time in Minutes
1. Total Time Grinding	80
2. Travel to and from Job	30
3. Train Delay	
4. Change Location	50
. Other Delay*	
6. Machine Delay*	360
7. Stone Delay	20
8. Servicing Time	60
9. Total Time	600

*Explanation: #6 replace main water pump motor

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		64.8	62.1	2.7	1	2.7
		60.9	60.0	.9	1	.9

Total Track Miles: 3.6
Total Pass Miles: 3.6

Approved by Foreman:
Date: May 30 1987

Approved by Supervisor:
Date: May 30/87

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2458(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: May 30 1987
Unit No.: RGM #1
Area: Teck
Subdivision: Tumbler

	Time in Minutes
1. Total Time Grinding	225
2. Travel to and from Job	30
3. Train Delay	70
4. Change Location	85
. Other Delay *	30
6. Machine Delay *	
7. Stone Delay	
8. Servicing Time	160
9. Total Time	600

*Explanation: #5 brake test and warm up

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		60.0	47.4	12.6	1	12.6
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.
		.	.	.		.

Total Track Miles: 12.6
Total Pass Miles: 12.6

Approved by Foreman: L Aspinall
Date: May 31 1987

Approved by Supervisor:
Date: May 31 / 87

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2456(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: May 31 1987
Unit No.: RGCC #1
Area: TECK
Subdivision: TUMBLER

	Time in Minutes
1. Total Time Grinding	125
2. Travel to and from Job	15
3. Train Delay	110
4. Change Location	180
5. Other Delay*	15
6. Machine Delay*	
7. Stone Delay	
8. Servicing Time	155
9. Total Time	600

*Explanation: #5 brake test and warmup eng.

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		51.1	51.0	.1	1	.1
		50.1	50.0	.1	1	.1
		50.0	49.9	.1	1	.1
		49.5	49.3	.2	1	.2
		48.9	48.7	.2	1	.2
		56.6	56.5	.1	1	.1
		56.0	55.8	.2	1	.2
		55.8	55.6	.2	1	.2
		54.1	53.9	.2	1	.2
		53.6	53.1	.5	1	.5
		53.1	52.9	.2	1	.2
		52.9	52.7	.2	1	.2
		47.4	46.9	.5	1	.5
		43.7	42.6	1.1	1	1.1

Total Track Miles: 3.9
Total Pass Miles: 3.9

Approved by Foreman: R. Aspinall
Date: June 2 1987

Approved by Supervisor:
Date: June 3/87

DISTRIBUTION:
1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2456(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: Oct 4 1987
Unit No.: RGM #1
Area: [illegible]
Subdivision: Tumbler

	Time In Minutes
1. Total Time Grinding	330
2. Travel to and from Job	60
3. Train Delay	80
4. Change Location	70
5. Other Delay*	30
6. Machine Delay*	
7. Stone Delay	
8. Servicing Time	120
9. Total Time	690

*Explanation:

#5 brake test and warm up

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		0.0	0.3	.3	2	.6
		4.7	5.0	.3	2	.6
		5.1	5.3	.2	2	.4
		5.3	5.6	.3	3	.9
		6.2	6.4	.2	2	.4
		6.5	6.9	.4	1	.4
		7.0	7.2	.2	2	.4
		7.9	8.1	.2	2	.4
		8.2	9.1	.9	1	.9
		9.5	9.7	.2	2	.4
		9.7	10.0	.3	2	.6
		10.8	11.1	.3	1	.3
		11.2	11.6	.4	2	.8
		11.7	11.9	.2	2	.4
		12.1	12.3	.2	1	.2
		14.0	14.2	.2	2	.4
		14.3	14.7	.4	2	.8
		14.9	15.3	.4	2	.8
		16.6	16.9	.3	1	.5

Total Track Miles: 5.9
Total Pass Miles: 10.0

Approved by Foreman: R Aspinall
Date: Oct 5 1987

Approved by Supervisor:
Date: Oct 6/87

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2456(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: Oct 5 1987
Unit No.: BGM#1
Area: TACHEEDA
Subdivision: E TUMBLER

	Time in Minutes
1. Total Time Grinding	260
2. Travel to and from Job	70
3. Train Delay	
4. Change Location	160
5. Other Delay*	35
6. Machine Delay*	
7. Stone Delay	25
8. Servicing Time	80
9. Total Time	630

*Explanation:
#5 Brake Test and warm up

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		18.5	18.7	.2	1	.2
		18.8	18.9	.1	2	.2
		19.4	19.6	.2	1	.2
		19.7	20.1	.4	2	.8
		20.5	21.1	.6	1	.6
		21.7	21.9	.2	2	.4
		22.1	22.2	.1	2	.2
		22.7	23.1	.4	2	.8
		23.9	24.3	.4	2	.8
		24.5	24.6	.2	1	.2
		25.2	25.3	.1	1	.1
		25.8	26.1	.3	1	.3
		26.6	26.9	.3	1	.3
		27.3	27.5	.2	3	.6
		27.6	27.9	.3	2	.6
		28.0	28.2	.2	2	.4
		28.3	28.5	.2	1	.2
		28.7	28.9	.2	1	.2
		29.0	29.2	.2	2	.4
		.	.	.		.

Total Track Miles: 4.8
Total Pass Miles: 7.5

Approved by Foreman: R Aspinall
Date: Oct 6 1987

Approved by Supervisor:
Date: Oct 6/87

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2456(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: Oct ~~15~~ 14 1987

Unit No.: RGM #1

Area: Tachead

Subdivision: Tumbler

	Time in Minutes
1. Total Time Grinding	35
2. Travel to and from Job	60
3. Train Delay	80
4. Change Location	80
5. Other Delay*	70
6. Machine Delay*	395
7. Stone Delay	
8. Servicing Time	
9. Total Time	720

*Explanation:

#5 brake test, warmup cool water car

A.C. Failure and travel

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		0.1	0.2	.1	3	.3
		9.5	9.6	.1	3	.3
		17.7	17.9	.2	3	.6
		29.2	29.4	.2	1	.2
		29.5	29.6	.1	1	.1
		29.7	29.9	.2	2	.4

Total Track Miles: .9

Total Pass Miles: 1.9

Approved by Foreman:

Date: Oct 16 1987

Approved by Supervisor:

Date: Oct 17/87

DISTRIBUTION:
1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2456(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: Oct 15 1987
Unit No.: RGM#1
Area: Tacheeda
Subdivision: Tumbler

	Time in Minutes
1. Total Time Grinding	30
2. Travel to and from Job	
3. Train Delay	
4. Change Location	
.. Other Delay*	
6. Machine Delay*	570
7. Stone Delay	
8. Servicing Time	
9. Total Time	600

*Explanation:
#6 repair RC and Travel

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		30.5	30.7	.2	2	.4
		31.0	31.3	.3	2	.6

Total Track Miles: .5
Total Pass Miles: 1.0

Approved by Foreman: C Aspinall
Date: Oct 16 1987

Approved by Supervisor:
Date: Oct 17/87

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2456(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: Oct 18 1987
Unit No.: BGM #1
Area: TECK
Subdivision: TUMBLER

		Time in Minutes
1.	Total Time Grinding	225
2.	Travel to and from Job	
3.	Train Delay	195
4.	Change Location	130
5.	Other Delay*	30
6.	Machine Delay*	
7.	Stone Delay	
8.	Servicing Time	140
9.	Total Time	720

*Explanation:
#5 brake test and warm up

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		31.5	31.6	.1	1	.1
		31.9	32.0	.1	1	.1
		32.1	32.2	.1	1	.1
		32.6	32.7	.1	1	.1
		32.7	32.8	.1	1	.1
		33.4	33.5	.1	1	.1
		33.6	33.9	.3	1	.3
		34.1	34.3	.2	1	.2
		39.7	39.9	.2	1	.2
		40.2	40.4	.2	1	.2
		40.5	40.6	.1	3	.3
		40.7	40.9	.2	2	.4
		40.9	41.1	.2	4	.8
		41.1	41.4	.3	3	.9
		42.1	42.2	.1	1	.1
		42.6	42.9	.3	1	.3
		43.2	43.4	.2	1	.2
		47.5	47.6	.1	1	.1
		47.9	48.1	.2	1	.2
		48.2	48.6	.4	2	.8

Total Track Miles: ___.___
Total Pass Miles: ___.___

Approved by Foreman: R. Aspinall
Date: Oct 17 1997

Approved by Supervisor:
Date: Oct 19 /87

page one of two

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer 3. PINK – Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor 4. GOLDENROD – Rail Grinding Foreman

Form 2458(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: Oct 16 1987

Unit No.: RGM #7

Area: TECK

Subdivision: Tumbler

		Time in Minutes
1.	Total Time Grinding	225
2.	Travel to and from Job	
3.	Train Delay	195
4.	Change Location	130
..	Other Delay*	30
6.	Machine Delay*	
7.	Stone Delay	
8.	Servicing Time	140
9.	Total Time	720

*Explanation: #5 brake test and warm up

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		48.7	48.9	.2	1	.2
		49.2	49.4	.2	1	.2
		49.8	50.0	.2	2	.4

Total Track Miles: 4.2

Total Pass Miles: 6.2

Approved by Foreman:

Date:

Approved by Supervisor:

Date: Oct 19/87

DISTRIBUTION:
1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

page two of two

Form 2456(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: Oct 17 1987
Unit No.: RGM #1
Area: TECK
Subdivision: Tumbler

	Time in Minutes
1. Total Time Grinding	420
2. Travel to and from Job	30
3. Train Delay	50
4. Change Location	80
. Other Delay*	35
6. Machine Delay*	
7. Stone Delay	20
8. Servicing Time	95
9. Total Time	730

*Explanation:
#5 brake test and warm up

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		68.5 68.1	68.8 68.7	.3 .3	2 1	.6 .2
		67.7	67.5	.2	1	.2
		67.4	67.1	.3	2	.6
		66.7	66.4	.3	1	.3
		65.5	64.8	.7	2	1.4
		69.0	69.2	.2	1	.2
		69.3	69.6	.3	1	.3
		71.1	71.3	.2	1	.2
		71.4	71.7	.3	1	.3
		71.9	72.2	.3	1	.3
		72.6	72.8	.2	1	.2
		73.4	73.5	.1	1	.1
		73.6	73.8	.2	1	.2
		74.1	74.3	.2	2	.4
		74.4	74.6	.2	1	.2
		74.9	75.1	.2	1	.2
		75.2	75.4	.2	1	.2
		75.9	76.1	.2	1	.2
		76.2	76.4	.2	1	.2
		76.6	76.8	.2	1	.2
		76 9	77 1	2	1	2

Total Track Miles: 10.3
Total Pass Miles: 13.3

Approved by Foreman: PAspinall
Date: Oct 18 1987

Approved by Supervisor:
Date: Oct 19/87

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2456(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: Oct 17 1987

Unit No.: RGM#1

Area: TECK

Subdivision: TUMBLER

		Time in Minutes
1.	Total Time Grinding	420
2.	Travel to and from Job	30
3.	Train Delay	50
4.	Change Location	80
5.	Other Delay*	35
6.	Machine Delay*	
7.	Stone Delay	26
8.	Servicing Time	95
9.	Total Time	730

*Explanation: *5 brake test and warm up

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		77.2	77.5	.3	1	.3
		78.6	78.8	.2	1	.2
		78.9	79.1	.2	1	.2
		79.2	79.5	.3	1	.3
		79.6	79.8	.2	1	.2
		64.0	64.2	.2	2	.4
		63.7	63.9	.2	2	.4
		62.8	63.2	.4	1	.4
		62.1	61.8	.3	2	.6
		60.7	60.6	.1	1	.1
		60.0	59.9	.1	1	.1
		59.8	59.6	.2	1	.2
		59.2	59.0	.2	1	.2
		58.9	58.7	.2	1	.2
		58.5	58.3	.2	1	.2
		58.1	57.9	.2	1	.2
		57.8	57.6	.2	1	.2
		57.4	57.2	.2	1	.2
		57.1	56.9	.2	1	.2
		56.6	56.5	.1	1	.1
		56 3	56 1	2	1	2
		56 1	5	3		1

Total 8 Track Miles: 10.3

Total 1 Pass Miles: 13.3

Approved by Foreman:

Date: Oct 18 1987

Approved by Supervisor:

Date: Oct 18/87

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2450(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: Oct 13 1987
Unit No.: RGM #1
Area: TECK
Subdivision: Tumbler

	Time in Minutes
1. Total Time Grinding	105
2. Travel to and from Job	75
3. Train Delay	30
4. Change Location	240
5. Other Delay*	30
6. Machine Delay*	
7. Stone Delay	
8. Servicing Time	80
9. Total Time	600

*Explanation:
#5 brake test and warm up

Other Comments:
#4 TECK TO ODELL

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		55.7	55.5	.2	1	.2
		55.3	55.1	.2	1	.2
		54.6	54.5	.1	1	.1
		54.4	54.2	.2	1	.2
		54.2	53.9	.3	2	.6
		53.6	53.1	.5	1	.5
		52.9	52.6	.3	1	.3
		52.5	52.4	.1	1	.1
		52.3	52.2	.1	1	.1
		51.8	51.7	.1	1	.1
		51.6	51.4	.2	1	.2
		51.1	50.9	.2	3	.6
		50.8	50.6	.2	2	.4
		50.2	50.1	.1	1	.1

Total Track Miles: 2.8
Total Pass Miles: 3.7

Approved by Foreman: RAspinall
Date:

Approved by Supervisor:
Date: Oct 20/87

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2456(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: May 14 1988
Unit No.: RGM #1
Area: Tacheeda
Subdivision: Chetwynd

	Time in Minutes
1. Total Time Grinding	280
2. Travel to and from Job	60
3. Train Delay	60
4. Change Location	65
5. Other Delay*	30
6. Machine Delay*	
7. Stone Delay	20
8. Servicing Time	145
9. Total Time	660

*Explanation: #5 brake test and warm up

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		522.0	537.6	15.6	1	15.6
		~~522~~				
Tumbler SUB		0	4	4	2	8

Total Track Miles: ____

Total Pass Miles: 16.4

Approved by Foreman: R Aspinall
Date:

Approved by Supervisor:
Date: MAY 20/88.

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2456(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: May 15 1988

Unit No.: RGM #1

Area: Tacheeda

Subdivision: Tumbler

	Time in Minutes
1. Total Time Grinding	290
2. Travel to and from Job	
3. Train Delay	120
4. Change Location	45
5. Other Delay*	30
6. Machine Delay*	15
7. Stone Delay	
8. Servicing Time	130
9. Total Time	630

*Explanation: #5 brake test and warm up

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		0.0	11.2	11.2	1	11.2
		.4	.7	.3	2	.6
		1.3	1.5	.2	2	.4
		3.5	3.7	.2	2	.4
		5.1	5.3	.2	2	.4
		5.4	5.6	.2	2	.4
		6.1	6.2	.1	2	.2
		7.0	7.2	.2	2	.4
		7.9	8.1	.2	2	.4

Total Track Miles: 11.2

Total Pass Miles: 17.4

Approved by Foreman:

Date: May 16 1988

Approved by Supervisor:

Date: May 27/88

DISTRIBUTION:
1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2456(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: May 16 1988

Unit No.: RGM #1

Area: Tacheeda

Subdivision: Tumbler

	Time In Minutes
1. Total Time Grinding	370
2. Travel to and from Job	
3. Train Delay	
4. Change Location	125
5. Other Delay*	25
6. Machine Delay*	
7. Stone Delay	25
8. Servicing Time	85
9. Total Time	630

*Explanation:
#5 brake test and warm up

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		11.2	24.2	13.0	1	13.0
		11.8	11.9	.1	2	.2
		14.1	14.3	.2	2	.4
		14.4	14.7	.3	2	.6
		14.9	15.1	.2	2	.4
		17.7	17.9	.2	2	.4
		19.4	19.6	.2	2	.4
		19.8	20.1	.3	2	.6
		21.7	21.9	.2	2	.4
		22.1	23.2	.1	2	.2
		22.6	23.1	.5	2	1.0
		23.9	24.2	.3	1	.3

Total Track Miles: 13.0

Total Pass Miles: 17.8

Approved by Foreman: R Aspinall

Date: May 17 1988

Approved by Supervisor:

Date: MAY 27/88

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2456(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: [illegible] 25 1988
Unit No.: BGM #1
Area: Tacheeda
Subdivision: Tumbler

	Time In Minutes
1. Total Time Grinding	310
2. Travel to and from Job	
3. Train Delay	115
.. Change Location	165
5. Other Delay*	30
6. Machine Delay*	
7. Stone Delay	
8. Servicing Time	130
9. Total Time	750

*Explanation: #5 brake test and warm up

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		23.8	35.0	11.2	1	11.2
		25.3	25.4	.1	2	.2
		27.2	27.4	.2	2	.4
		27.5	27.8	.3	2	.6
		28.0	28.2	.2	2	.4
		28.3	28.4	.1	2	.2
		29.0	29.2	.2	2	.4
		29.2	29.4	.2	2	.4
		29.6	29.7	.1	2	.2
		31.0	31.2	.2	2	.4
		33.6	33.9	.3	2	.6

Total Track Miles: 11.2
Total Pass Miles: 15.0

Approved by Foreman: R Aspinall
Date: May 27 1988

Approved by Superviser:
Date: June 7 88

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2458(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: May 26 1988

Unit No.: RGM #1

Area: Tacheeda

Subdivision: Tumbler

	Time in Minutes
1. Total Time Grinding	285
2. Travel to and from Job	
3. Train Delay	25
.. Change Location	185
5. Other Delay*	30
6. Machine Delay*	20
7. Stone Delay	25
8. Servicing Time	150
9. Total Time	720

*Explanation:

#5 brake test and warm up

#6 Engine two over heated in tunnel. Reset and restart

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		35.0	40.0	5.0	1	5.0
		43.6	44.6	1.0	1	1.0
		44.6	47.3	2.7	1	2.7
		47.3	47.4	.1	2	.2
		43.6	43.4	.2	2	.4
		42.8	43.0	.2	2	.4
		42.2	42.1	.1	2	.2
		41.2	41.4	.2	1	.2
		41.0	41.2	.2	1	.2
		40.7	41.0	.3	2	.6
		40.4	40.5	.1	2	.2
		40.0	43.6	3.6	1	3.6

Total Track Miles: 12.4

Total Pass Miles: 14.7

Approved by Foreman: E Aspinall

Date: May 27 1988

Approved by Supervisor:

Date: June 8 /88

DISTRIBUTION:
1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2458(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: May 28 1988
Unit No.: RGM #1
Area: Tumbler
Subdivision: Tumbler

	Time in Minutes
1. Total Time Grinding	240
2. Travel to and from Job	
3. Train Delay	70
.. Change Location	135
5. Other Delay*	20
6. Machine Delay*	
7. Stone Delay	20
8. Servicing Time	145
9. Total Time	630

*Explanation:
#5 [illegible] test and warm up

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		47.3	54.2	6.9	1	6.9
		47.9	48.1	.2	1	.2
		48.2	48.5	.3	1	.6
		48.6	48.8	.2	2	.4
		49.3	49.4	.1	2	.2
		49.9	50.0	.1	1	.1
		49.9	51.1	.2	2	.4
		52.3	52.4	.1	1	.1
		52.5	52.6	.1	1	.1
		52.7	52.9	.2	2	.4
		53.2	53.6	.4	2	.8
		53.9	54.2	.3	2	.6

Total Track Miles: 6.9
Total Pass Miles: 10.8

Approved by Foreman: F. Aspinall
Date: May 28 1988

Approved by Supervisor:
Date: June 6/88

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2458(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: May 28 1988

Unit No.: RGM #1

Area: Tumbler

Subdivision: Tumbler

		Time in Minutes
1.	Total Time Grinding	440
2.	Travel to and from Job	30
3.	Train Delay	35
..	Change Location	35
5.	Other Delay *	25
6.	Machine Delay *	
7.	Stone Delay	35
8.	Servicing Time	120
9.	Total Time	720

*Explanation:

#5 Brake test and warm up

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		67.6	80.0	13.0	1	13.0
		69.4	69.6	.2	1	.2
		69.0	69.3	.3	2	.6
		68.5	68.8	.3	2	.6
		68.0	68.4	.4	2	.8
		71.5	71.8	.3	2	.6
		71.9	72.2	.3	2	.6
		72.8	72.9	.1	2	.2
		74.1	74.3	.2	3	.6
		74.4	74.6	.2	3	.6
		74.9	75.0	.1	3	.3
		75.2	75.4	.2	1	.2
		75.8	76.0	.2	2	.4
		76.3	76.4	.1	2	.2
		76.5	76.7	.2	2	.4
		76.8	77.0	.2	2	.4
		78.6	78.8	.2	1	.2
		78.9	79.1	.2	1	.2
		67.3	67.5	.2	2	.4
		67.1	67.3	.2	1	.2

Total Track Miles: 13.0

Total Pass Miles: 20.7

Approved by Foreman: R Aspinall

Date: May 30 1988

Approved by Supervisor:

Date: June 7/88

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2456(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: May 29 1988
Unit No.: RGM #1
Area: Tumbler
Subdivision: Tumbler

	Time in Minutes
1. Total Time Grinding	290
2. Travel to and from Job	30
3. Train Delay	125
.. Change Location	55
5. Other Delay*	25
6. Machine Delay*	
7. Stone Delay	15
8. Servicing Time	180
9. Total Time	720

*Explanation:
#5 Brake test and warm up

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		67.0	54.2	12.8	1	12.8
		64.8	65.3	.5	1	.5
		64.0	64.2	.2	1	.2
		63.9	63.7	.2	2	.4
		62.8	63.2	.4	1	.4
		60.0	59.9	.1	1	.1
		59.8	59.6	.2	1	.2
		59.0	59.2	.2	2	.4
		57.5	57.3	.2	1	.2
		56.8	56.7	.1	1	.1
		56.3	56.1	.2	1	.2
		56.0	55.7	.3	1	.3
		55.6	55.5	.1	2	.2
		55.3	55.1	.2	1	.2
		54.4	54.3	.1	1	.1

Total Track Miles: 12.8
Total Pass Miles: 16.3

Approved by Foreman: R Aspinall
Date: May 30 1988

Approved by Supervisor:
Date: June 7/88

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2458(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: May 30 1988
Unit No.: RGM#1
Area: Tacheeda
Subdivision: Tumbler

	Time in Minutes
1. Total Time Grinding	300
2. Travel to and from Job	10
3. Train Delay	25
.. Change Location	155
5. Other Delay*	20
6. Machine Delay*	90
7. Stone Delay	
8. Servicing Time	
9. Total Time	600

*Explanation:
#5 brake test and warm up

#6 Move speeder Ab-17
to Whitford
(Accident)

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		50.1	50.3	.2	1	.2
		40.5	40.8	.3	1	.3
		28.9	30.4	.5	1	.5
		27.4	28.4	1.0	2	2.0
		25.3	25.2	.1	2	.2
		23.1	22.7	.4	2	.8
		22.3	22.1	.1	2	.2
		20.2	19.8	.4	1	.4
		19.6	19.4	.2	1	.2
		15.2	14.9	.3	2	.6
		14.9	14.4	.4	2	.8
		14.3	14.1	.2	2	.4
		11.6	11.3	.3	2	.6
		11.2	10.9	.3	1	.3

Total Track Miles: 4.7
Total Pass Miles: 8.5

Approved by Foreman: R Aspinall
Date:

Approved by Supervisor:
Date: June 7/88

DISTRIBUTION: 1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2436(7/86)

BCRAIL

RAIL GRINDER DAILY REPORT

Date: May 31 1988

Unit No.: RGM #1

Area: Tacheeda

Subdivision: Chetwynd & Tumbler

	Time in Minutes
1. Total Time Grinding	225
2. Travel to and from Job	
3. Train Delay	50
. Change Location	305
5. Other Delay*	20
6. Machine Delay*	
7. Stone Delay	
8. Servicing Time	
9. Total Time	600

*Explanation: #5 brake test and warm up

Other Comments:

WORK PERFORMED:

Track Number	Curve Number	Beginning Milepost	Ending Milepost	Track Miles	Number of Passes	Pass Miles
		11.2	10.9	.4	1	.4
		7.8	8.2	.4	2	.8
		7.0	7.3	.3	2	.6
		6.3	6.4	.1	2	.2
		3.3	3.5	.2	1	.2
		5.6	5.4	.2	2	.4
		5.2	5.4	.2	2	.4
		1.4	1.6	.2	2	.4
		485.3	484.8	.5	1	.5
		484.6	484.7	.1	1	.2
		481.7	482.3	.6	2	1.2
		481.2	481.4	.2	2	.4
		475.7	476.0	.3	2	.6
		474.3	474.4	.1	2	.2
		473.6	473.8	.2	2	.4
		470.6	470.7	.1	2	.2
		470.4	470.5	.1	2	.2
		470.0	470.1	.1	2	.2

Total Track Miles: 4.3

Total Pass Miles: 7.5

Approved by Foreman: L Aspinall

Date:

Approved by Supervisor:

Date: June 2 /88

DISTRIBUTION:
1. WHITE – Senior Track Maintenance Engineer
2. CANARY – Rail Grinding Supervisor
3. PINK – Track Maintenance Engineer
4. GOLDENROD – Rail Grinding Foreman

Form 2458(7/86)